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ECONOMIC AND INDUSTRIAL AFFAIRS

No. 1983



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EAST EUROPE REPORT
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CEMA COUNTRIES' 1980 ECONOMIC PLANS VIEWED

Budapest HETI VILAGGAZDASAG in Hungarian No 3, 19 Jan 80 pp 6-7

[Article by Pal Lederer (Moscow), Janos Temesi (Sofia), Tibor Sebestyen (Prague), Janos Barabas (Warsaw), and Otto Oltvanyi (Bucharest): "The 1980 Economic Plans the CEMA Countries--Change of Speed"]

[Text] For the most part, the European CEMA countries are calling for a more moderate economic rate of growth this year. In adjusting to the more stringent world economic conditions, they are carrying out modifications in their system of economic guidelines, and are seeking to stimulate more efficient production even more vigorously than before, a savings in energy, and the manufacture of modern products. The published planning guides bear witness of the same, or at least similar, problems and intentions and at the same time reflect the differing endowments and national characteristics of the individual socialist countries.

The USSR: The Decisive Year

The USSR's 1980 national economic plan pays particular attention to the utilization of reserves, increased production efficiency, and the strengthening or quality requirements. Leonid Brezhnev, the secretary general of the Communist Party of the Soviet Union, gave a comprehensive, critical analysis of the Soviet economic situation. Among other things, he pointed out that 1979 turned out to be the most difficult year in the Tenth Five-Year Plan and indicated that this year--as compared to the original tasks--it will be necessary to restrain the rate of realization for certain economic goals.

"In the 1980's it will be necessary to improve the country's fuel and energy balance, to reduce the share of oil in operating thermal power plants and replace oil more and more with natural gas. We need to expand natural gas production, chiefly in Western Siberia, and in addition it will be necessary to develop more rapidly the consumption of atomic energy, not only for electricity production but also for heating purposes. We must begin the exploitation of coal deposits in the eastern areas," the secretary

general of the Communist Party of the Soviet Union said. "We must begin to think of future energy management in time," he added, "since the economic development of the country depends largely on this."

This year the branches which manufacture both producer means and consumption items will step up their production somewhat over last year, but to a lesser extent than originally called for in the five-year plan. Among the key branches, we have marked as the chief task the expansion of the production scale and the modernization of product structure in metallurgy and the metal processing industry. Particular attention is being directed at the machine industry, which must be developed in 1980 at a faster rate than industry as a whole. Considering the special tasks falling on the extractive branches, incentive is being given primarily to the manufacture of petroleum and natural gas industrial equipment. Production in the light industry this year will rise more slowly than average, but on the other hand the manufacture of durable consumer goods will increase considerably.

A vigorous increase in agricultural production temp--8.8 percent as compared to 5.8 percent in 1979--but taking into account the effect of last year's unfavorable developments in grain and fodder it is expected that meat and milk production as well as the volume of other foods will be somewhat lower than planned.

The success of the Tenth Five-Year Plan and of the final year, which has been called decisive, depends on how efficiently the producer units manage and to what extent there will be success in realizing the outlook and practice of the rational economical use of resources. Regarding this year's plan, responsible persons have emphasized on various occasions that it is not the increase in production quantity but the improvement of quality indexes that is now important.

Bulgaria: A New Outlook

The requirements of economy must now be emphasized, we must break with the quantitative outlook--this is suggested by the current year's Bulgarian economic development plan.

The growth indexes are lower than those that were set in 1978 for 1980. (In Bulgaria there is a biennial planning system within the five-year plans, and every year they approve a plan for two successive years). The 1980 targets--as put by Kiril Zarev, deputy prime minister and chairman of the State Planning Committee--have set a more realistic and calmer development pace. The more moderate development rate--the commentators emphasis--will make it possible to concentrate the overwhelming bulk of attention on the fulfillment of quality tasks.

Bulgarian economists point out that the main concern of economic development is that the bulk of the industry is of medium level as compared to the world's leading level, and frequently this industry manufactures very material-intensive products that are difficult to sell on international markets given the present slack demand. The problem is compounded by the fact that Bulgaria is dependent on very serious imports for most of the important raw materials and energy sources, and for this reason alone it cannot undertake the manufacture of material-intensive industrial products.

There is also more and more discussion in Bulgaria about the coming years. They expect of the new economic mechanism that was introduced in 1979 that with its help they will be better able to guide production and commodity trade and reduce administration to a minimum. The slogan will be technical progress and the intellectualization of work, that is, an increase in the ratio of products that require particularly great expertise.

CSSR: Emphasis on Export

Gustav Husak, the secretary general of the CSSR Communist Party's Central Committee characterized the 1980 plan of the CSSR economy by saying in his concluding remarks before the Central Committee plenary that it establishes the foundation for the further development of the economy and the living standards, although it sets a slower growth rate because of the given conditions and possibilities.

Within industrial production, the leading role for improving the foreign economic equilibrium of the country falls on the machine industry: in 1980 it will have to increase production by 5.8 percent as compared to the preceding year. The industry as a whole received the task of increasing by 6.8 percent the volume of export products, while domestic investment deliveries should decline by 1.9 percent in value as compared to last year. One of the stressed goals of the CSSR economic plan is that in foreign trade the export growth must exceed that of import, by 0.2 percent in the socialist relation and by 4 percent in trade conducted with nonsocialist countries.

The volume of starting investments during the year was moderated by 20 percent as compared to the original plans in order that resources could be adequately concentrated on the rapid completion of important works in progress.

Last year the leading organs of the country approved a long-range energy savings program which is now being started and will reduce when it is carried out the consumption of heating fuel by 1 percent in electricity production.

In industry, the wage system was modified in such a way that it should stimulate the participants in production, at every level, to quality improvement and to an increase in the ratio of first-class goods. In agriculture, they raised the purchasing price of certain animal products in order to raise the livestock production inclination of those working under more difficult circumstances in the agricultural plants. They are also planning to introduce a

new kind of economic fine on those responsible for delays in putting into operation expensive import equipment. Everywhere they are starting to reduce administrative personnel and at the same time make work more efficient.

Poland: Proceeding From the Possibilities

The possibilities for the 1980 Polish economic plan are set by the continuing unfavorable world economic situation and last year's results which did not meet expectations. It was not by chance that at the parliamentary session which debated the plan, Piotr Jaroszewicz, Poland's chairman of the Council of Ministers, devoted great attention to the problems of last year's plan fulfillment.

In 1979, agricultural production in Poland lagged 2 percent behind the previous year, and the value of the production loss came to about 35 billion zlotys. Thus it became necessary again to import more than 1 billion dollars' worth of grain and fodder, which further restricted the otherwise also limited import possibilities for raw and basic materials. Coupled with delivery and energy supply concerns, these problems led to the industry's inability, after the hard winter, to make up for all the lag. Its production increased by only 2.6 percent as compared to the targeted 4.9 percent. On the other hand the population's normal income increased more rapidly than expected, or by about 10 percent, and real income by 2 percent.

As a consequence of all this, the targets for this year's plans are more modest. The government wishes to promote their fulfillment by taking new measures: the annual plan is divided into quarterly tasks since 1 January the heating and fuel consumption norms in the state sector are more strict, the purchasing price of milk has been increased, and fodder savings premiums have been introduced.

In the marketing of products, the basis of judgment is increasingly becoming quality, reduction of production costs, economy and productivity. For example, those enterprises are being severely punished which exceed the electricity limits they are permitted. On the other hand, additional supports will be given those organizations which effectively increase their exports. This is particularly important because according to plan the trade equilibrium must be restored this year with the capitalist countries.

It is characteristic of this year's plan that on the basis of last year's experience the scope of the special economic areas has been expanded. In accordance with the program for economic maneuver, housing construction, agriculture and the food industry already enjoy a two-year priority, as well as the production of consumption items and the manufacture of export goods. In addition to these, the needs of energetics, mining, transportation, health, education, and science are being stressed by the plan.

GDR: Exports Earning Foreign Exchange

The 1980 economic plan approved by the GDR People's Assembly (Nepi Kamara) calls for an increase of 4.8 percent in the national income, 4.7 percent in

industrial production, and 4.5 percent in productivity. Forty-eight billion marks, or essentially the same sum as in 1979, will be devoted to the realization of investments, and of this the expenditures will be primarily for the completion of investments already underway.

There are significant differences in the development rates of the individual economic branches: while a production increase of over 7 percent is being planned for in machine manufacture, electronics, electro-techniques and vehicle manufacture, this index is 2.4 percent in the light industry, and 0.5 percent in agriculture and the food industry. An important efficiency index of the plan is the desire to reduce specific energy and material consumption.

The plan calls for a 12 percent increase in foreign trade as compared to 9.8 percent in 1979. As Gunther Mittag, the secretary of the Central Committee of the Socialist Unity Party of Germany, put it: "The increased costs on the raw materials market must be balanced out by an expansion of export."

The GDR's commodity exchange with the socialist countries will increase by 5 percent, including a 12 percent rise in trade with the Soviet Union. According to plans, the Soviet Union will export to the GDR 500,000 tons more oil than in 1979, or a total of 19 million tons.

In comparison to 1979, the goals of the plan are the same for the population's money income and the increase in retail trade, that is, an increase of 4 percent. In 1980, 16.4 billion marks will be devoted to the support of consumer items, services and transportation.

Main Indexes in the 1980 Plans of the European Socialist Countries (growth as compared to 1979, in percent)

Country	National Income	Industrial Production	Productivity	Agric. Economic Production	Retail Trade	Real Income
GDR	4.8	4.7	4.5	0.5	4.0	4.0 ³
Poland	1.4-1.8	3.0-4.2	--	5.8	--	1.0-1.3 ⁴
Bulgaria	5.7	6.3	5.4	3.7	--	3.0
CSSR	3.7	4.0	3.2	7.2	3.4	2.2
Romania	8.8	11.5	8.7	4.7-6.0	9.3	9.6 ⁵
USSR	4.0	4.5	3.8	8.8	--	2.9
Hungary	3.0-3.5	3.5-4.0	4.1 ¹	5.0-5.5	9.3 ²	0

¹ total material branches ² total by main commodity group ³ net money income of the population ⁴ real wages ⁵ nominal wages

The basic goal of the plan is the continuation and consistent realization of the program, which in the GDR they call the program for full employment, people's welfare, development and solidarity.

Romania: Forced Tempo

In 1980 Romania continued its large-scale efforts at the industrialization of the country. According to the goal, net industrial production will grow this year, too, to an extent that will assure an annual 11 percent rise in the entire five-year plan period.

As Romania is striving for self-sufficiency in raw and heating materials, the plan is concentrated on speeding up the exploratory operations of existing petroleum, natural gas, coal, and combustible shale reserves. Electric energy production will again increase this year, and the ratio of coal-burning thermal power works in electric energy production will be increased at a faster rate than up to now.

A central task in the program is the increase of steel production. Above all, the manufacture of highly processed metallurgical products made of high-grade steel will be increased. Among the development goals of the machine industry is the production of high-level technical equipment, heavy machine tools, and electronic, electrotechnical, precision mechanical and optical mechanical items. The chemical industry is emphasizing the production of the less energy-intensive products.

The plans calls for the development and modernization of intensive management in agriculture, and for the mechanization of the branch. The goal for grains is high: in 1980, a total of 26 million tons of grain must be produced. Mechanization would also serve the goal of making it possible to perform harvesting more rapidly, as well as other agricultural jobs, for as a matter of fact during last year's campaign they also used the social work of the population.

Romania desires to take more active and effective part in international work specialization. Foreign trade, according to the plan as compared to 1979, will be 14.8 percent greater in volume, and the main emphasis will be on increasing exports.

One of the cardinal points of the plan in Romania, too, is to increase economic efficiency. By improving the economic-financial system, they desire to create better conditions for the full execution of the programs.

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CSO: 2500

PROGRESS, FUTURE PLANS IN TRANSPORTATION SECTOR

Tirana BASHKIMI in Albanian 15 Dec 79 pp 1,2

[Interview with Minister of Communications Luan Babameto by the editor of BASHKIMI: "The Successes Achieved During This Year Will Serve for a Greater Mobilization of the Communications Workers to Successfully Fulfill the Tasks for 1980"]

[Text] Question: Comrade Minister, the workers of the communications sector, just as all workers of our country, have carried out great efforts to fulfill the tasks of this year. Could you tell us about some of the results achieved?

Answer: The year 1979, the year of the 35th anniversary of the liberation of the fatherland, has been a year of labor and struggle for fulfilling the tasks of the state plan for all workers of our country, including the workers of the communications sector. For the three types of transportation taken together, the volume of work is expected to be fulfilled 101.7 percent in tons and 103.6 percent in tons kilometers. In the automobile transportation, [the plan is expected to be fulfilled] 100 percent in tons and 100.8 percent in tons kilometers. Good measures were taken, especially for the broad utilization of trailers; consequently, the plan tasks were overfulfilled, giving 9 million tons kilometers above plan.

A characteristic of this year has been the greater centralization of the circulation of goods by rail transportation, where the tasks are being fulfilled 104.5 percent in tons and 108.8 percent in tons kilometers, thus better implementing the decisions and directives of the Seventh Party Congress on expanding and intensifying the railway transportation sector with the prospect that it will occupy the main place among all the types of transportation.

Priority has also been given to domestic and foreign sea transportations, where the tasks were fulfilled 100 percent in tons and 103.5 percent in tons miles and 103.8 percent in hard currency leks.

The collectives of sea ports have also been mobilized in work, successfully meeting the needs of this year for loading and unloading of goods.

A greater attention has also been devoted to the production and repair, with our own forces, of the spare parts of a number of important aggregates; as a result of this, the overall industrial production plan was fulfilled 100.5 percent.

The collectives of the directorates for the maintenance of roads are making better and better progress in the maintenance and improvement of our road system.

A great amount of work was also carried out for eliminating the consequence of the earthquake of 15 April. Drivers and specialists from all enterprises worked day and night and became a great example of inspiration for all the other workers wherever they worked in their work fronts, regularly fulfilling the plan tasks. We used and are using the experience, that was amassed during the period of the earthquake in the organization, management, discovery and utilization of internal reserves, to better execute our tasks in all fields.

Nevertheless, we must further strengthen the work to achieve a better tempo in the circulation of goods and the fulfillment of contracts, especially in regard to goods for export, timber, building materials and so forth.

Question: The party has recommended and the government has assigned a number of important tasks for strengthening the system of conservation, especially of motor fuel, tires and so forth, and for further reducing the norms of their utilization. Can you tell us what the ministry and the enterprises have done to implement these tasks, what results have been achieved and what is being done to generalize the most advanced examples?

Answer: This year, implementing party recommendations and the special tasks of the Decision of the Council of Ministers, better results have been achieved in the field of conserving motor fuel and tires, thus, further reducing their utilization. For this purpose, a broad discussion was organized with the working collectives of our enterprises; and the advanced experience in regard to the ways and opportunities to further conserve motor fuel and tires was analyzed and generalized for all drivers, repair workers and management personnel of enterprises.

The increasing of the volume of work with trailers has been an important measure for saving motor fuel. This work is being further advanced by increasing the number of trailers, by determining the criteria of work for trailers and by adapting roads for motor vehicles with trailers. As a result, this year the volume of work with trailers has been exceeded, amounting to 9 million tons kilometers above the plan. The gasoline saved has been used for vehicles with gasoline, and more perfected equipment has been tested.

As a result of better management and of the daily distribution of motor fuel for each driver and for every work front, the indices for the utilization of the means, such as the coefficient for travelling, the coefficient for loading, output and so forth, have also been increased. Better results, especially in this field, have been achieved by the automobile parks of Durres, Prrenjas, Kukes and Rreshen, the shipping section and so forth.

The intensification of work by railways and the increase of the load on trains have considerably lowered the consumption of motor fuels in comparison with the automobile transportation sector. The shipping service by means of rail transportation has been better organized. Studies have been carried out to replace internal automobile transportation with cableways and with other means.

Competitions and forms of encouragement of the initiatives and pledges in regard to saving motor fuel have been further revitalized in enterprises. Now each driver is acquainted with the results he has achieved in the utilization of tires and motor fuel. The standard's of the outstanding drivers are continually being changed with new results, while a continued and instructive work is carried out on an individual basis with those who do not fulfill their norms.

Because of this, the 1979 norms in the automobile transportation of goods with diesel fuel have been reduced by 1.6 liters per 1000 tons kilometers, and with gasoline by 30 liters, compared to 1978. Also, in the railway transportation of goods there is a further reduction of norms for this year by 1.6 liters per 1000 tons kilometers. The corrected planned norm in the passenger transportation services has also been fulfilled.

However, our working collectives must work more in order to better utilize the reserves which we still have in these fields.

Question: During this year, a good scientific study work has been done in the communications sector. It would be of interest to our readers to acquaint themselves with the problems that have been solved and with some of the results achieved.

Answer: This year has also been characterized by a comprehensive mobilizing work for the further development and expansion of the technical and scientific revolution. The drafting of the technical and scientific plan for this year had a massive character: all the working people, specialists and cadres participated in its drafting. The massive character was further expanded through the participation in its execution. A total of 346 themes of the nomenclature of enterprises, 35 themes of the nomenclature of the ministry and 9 themes of the nomenclature of the Council of Ministers have been planned, and the anticipated themes have been concluded.

As a result of this broad and massive work, a number of successes have been achieved with our own forces in the production of various types of equipment, machinery and spare parts, thus, overcoming the difficulties and obstacles caused by the imperialist and revisionist encirclement and blockade.

The type of the 500 TDW - vessel was put in production; the study and designing of the 2700 TDW - vessel has been concluded; and the 4 axle-car, the self-unloading car and the refrigerator for the transportation of goods for export were tested and so forth. The study of the construction of the 100 ton-crane and of the cistern vessel have begun.

Some 22 ton-barges and large 3 axle-trailers for increasing the capacity of transportation have been produced; a new type of valves for barges and the repair section for various valves have been put into production and so forth.

Scientific studies have examined matters concerning work organization in the transportation sector and in the circulation of goods, both within the same type of transportation and between the different types of transportation, in order to avoid the various criss-crossings of means of transportation and the violations of train schedules and so forth. Efforts have been made in this field. More studies have been carried out and are being carried out on the specialization of vehicles in conformity with the goods that we transport, as well as on the perfection of mechanization and of packaging in cooperation with other sectors of the economy.

Our workers must make more studies and deep analyses with regard to the improvement of the quality of repairs to the means of transportation and of the quality of the production and repair of spare parts, directly linked with prolonging the life of vehicles and increasing their productivity.

Question: Where will the efforts of the communications workers be concentrated in 1980 and what technical and organizational measures are being taken for a good start in the last year of this five-year plan and for its successful completion.

Answer: The tasks of the transportation workers for 1980 will be complex, with a noticeable increase compared with 1979. These tasks are linked with the stage of development of our entire economy. First of all, our workers must strengthen discipline in regard to the care and maintenance of the means of transportation and the transportation of goods in on schedule accordance with the contracts. Efforts are also being made to improve the skilled management and organization of work in order to better respond to the present stage of development of the economy.

Measures are being taken on our part in regard to reducing the stocks of goods at the producer's so some shortages, created in some goods this year, might be eliminated and so that we might begin the first days of the coming year with a regular transportation of products. The enterprises are also organizing their work for a gradual improvement of the condition of vehicles by confronting the difficulties of the terrain in the winter period ahead of us.

In the railway transportation sector, where the volume of work increases by more than 14 percent, compared to 1979, measures have been taken for strengthening discipline, for a better organization of the movement of trains, for improving the conditions of the storing of goods and for improving the technical condition of loading and unloading mechanisms and so forth.

Greater tasks have been assigned in order to meet, with our own forces, the needs for the production and restoration of spare parts, in order to better respond to the need for the strengthening of the technical readiness of vehicles, expanding the retreading of tires, further conserving motor fuel, improving the conditions of roads and keeping them open during the winter period and so forth.

The year 1980, as the last year of the Five-Year Plan, will be a year of greater mobilization for our communications workers, a year that will be characterized by a greater monitoring of the tasks from the beginning of the year in order to provide their regular fulfillment in all areas.

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CSO: 2100

1980 ECONOMIC RESULTS SUMMARIZED

Results Summarized

Prague HOSPODARSKE NOVINY in Czech 18 Jan 80 p 2

[Report of the Federal Statistical Office: "The Year 1979"]

[Text] Despite the demanding internal and external conditions, the development of the national economy registered the following basic tendencies in 1979:

--in industry, the gross production volume was by 3.7 percent higher than in 1978, while the enterprise production plans were fulfilled;

--in sales of industrial products, the planned deliveries for capital investment projects were surpassed, while the deliveries for other directions of sales were smaller than planned;

--in the building industry, the volume of construction was by 3.7 percent bigger than in 1978, but the plan targets were not met;

--in animal production, the purchase schedule was surpassed in regard to calves and poultry for slaughter and eggs, while the purchase plan was not fulfilled in regard to other animal products;

--the retail trade turnover increased more rapidly than anticipated by the annual state plan;

--in foreign trade, the growth rates in exports and imports essentially coincided with the intentions of the state plan;

--individual monetary incomes increased less, but the earned incomes increased more than the state plan had anticipated. The trend in monetary expenditures essentially coincided with the plan.

The number of workdays both in December and entire year 1979 was exactly the same as in 1978.

In centrally planned industry, the gross production volume reached Kcs 51 billion in December, or 5 percent more than in December 1978. The

enterprise production plans were fulfilled by 99.2 percent. Approximately one third of industrial enterprises failed to meet their production targets in December.

The basic industrial sectors generally fulfilled their production plans. The total output of coal including lignite amounted to 124.7 million tons in 1979 which was by 1.2 percent more than in 1978. Electric power production amounted to 68 billion kWh which was by 0.6 percent more than in 1978. In metallurgy including the ore input, the enterprise production plans were surpassed by 0.1 points primarily because of the higher output of metallurgy of nonferrous metals. The production of pig iron amounted to 9,529,000 tons, crude steel to 14,827,000 tons and rolled materials to 10,764,000 tons in 1979. In engineering, the detailed enterprise production plans were surpassed by 0.2 points or Kcs 374 million. Although the consumer industry as a whole surpassed the enterprise plans by 0.2 points, the planned production targets were not met by the woodworking industry, glass, ceramics and porcelain industry, and leather, shoe and furrier industries. The plan was not completely fulfilled also by the production of building materials and food industry.

While the enterprise production plans were generally fulfilled 99.9 percent, 20 percent of enterprises failed to meet their production targets. The difference in the enterprise plans amounted to Kcs 517 million. In comparison with 1978, labor productivity in industry increased by 2.9 percent in 1979 and this accounted for approximately 80 percent of the production increase.

In the sales of industrial products, the deliveries to all sectors accelerated during the last months of the year. During the January-November period, the sales reached Kcs 722.4 billion which was by 2.9 percent more than during the same period of last year. The shipments of machinery and equipment for the capital investment projects continued to exceed the rate planned for the entire year, while the sales to other sectors fell short of this goal.

In the building industry, the construction enterprises in December had fulfilled their plans by 99.2 percent. In comparison with December 1978, the volume of construction work was 2.3 percent higher. The enterprise plans of construction work were met by 98.6 percent for the entire year of 1979, but 64 construction enterprises, that is 27.5 percent of the total number failed to meet the planned goal. The total lag of construction work with reference to the enterprise plans amounted to Kcs 1,172 million in 1979. The total value of construction work completed in 1979 was Kcs 81.6 billion. In comparison with 1978, the growth rate reached 103.7, while the state plan had anticipated a growth rate of 105.5. In the structure of construction work according to the supplier contracts, the increase in construction work planned for the entire year was not reached in capital investment projects and particularly in comprehensive housing construction. In the projects specified as mandatory tasks in capital construction, the fulfillment of the annual state plan in terms of completed investment projects and deliveries was higher than in other projects. The

contracting enterprises completed 13.6 percent more apartments in December 1979 than in December 1978. During the entire year of 1979, however, 2,746 fewer apartments were completed than in 1978: the annual state plan of housing construction carried out by the contracting enterprises was fulfilled 92.8 percent. Labor productivity in the building industry increased by 3.1 percent in 1979--the increase in construction volume was achieved in the planned volume by the increase in labor productivity.

In agriculture, the purchase schedule in animal products was fulfilled by 97.7 percent for slaughter animals, 104.6 percent for poultry, 97.7 percent for milk and 100.5 percent for eggs in 1979. Total 1979 purchases exceeded 1978 purchases by 46,400 tons of slaughter animals including poultry, by 47.8 million liters of milk and by 79 million of eggs.

Public freight transportation carried 47.4 million tons of commodities in December, that is by 5.6 percent more than in December 1978. The monthly transportation plan was fulfilled by 103.7 percent, for railroad transportation by 106.9 percent, for CSAD [Czechoslovak State Automobile Transportation] by 100.3 percent. A total of 620.5 million tons of commodities were carried during the January-December period which was 1.1 percent more than in 1978. The total volume of commodities carried by railroad transportation increased by 1.7 percent and that carried by CSAD by 0.4 percent. The planned transportation tasks were discharged better by railroad transportation than by CSAD both in terms of the volume of transported goods and qualitative indicators. The commodity transportation plan was fulfilled by 99.1 percent by CSAD and by 99.5 percent by CSD [Czechoslovak State Railroads]. Railroad loading volume increased by 1.3 percent over the 1978 level, the average daily loading for railroad car units by 0.3 percent, while the average period of circulation per railroad car unit counted in days was reduced by 0.9 percent.

In foreign trade, the total 1979 exports surpassed the 1978 level by 9.8 percent and the total imports by 11.8 percent. The annual state plan was thus 100 percent fulfilled in exports and by 100.9 percent for imports.

In domestic trade, retail trade turnover in the main trade systems amounted to Kcs 22.7 billion in December and was 6.6 percent larger than in December 1978. During the entire year of 1979, all trade systems sold goods in the value of Kcs 248.2 billion which was 2.8 percent more than in 1978. The increase in the retail trade turnover in all trade systems planned for the year was 2.3 percent. The following trade organizations contributed most significantly to the total retail trade turnover increase: Coal Yards (119.8 effect of the price revision in July 1979), Footwear (107.2), Industrial Goods Sales (105.2) and Cedok--public catering (105).

Statistics for 1979

Prague HOSPODARSKE NOVINY in Czech 16 Nov 79 p 2

[Text] Personal cash earnings increased during January-November period of 1979 (compared to same period 1978) by 3.5 percent; wages increased by 3.4

percent and exceeded the federal plan by 0.1 of a point. Actual consumption expenditures during January-November 1979 developed roughly on the level of the annual federal plan.

Personal savings as of 15 December 1979 reached Kcs 145.2 billion and were Kcs 4.8 billion higher than on 15 December 1978.

Money supply was Kcs 39,285 million as of 31 December 1979.

Basic Indicators of Development of National Economy in December 1979
Increment Over Comparable 1978 Period (in percent)

	<u>Nov</u>	<u>Dec</u>	<u>Jan- Dec</u>	<u>Federal plan¹</u>
Industry:				
Gross production	5.6	5.0	3.7	4.1
Average number of workers	0.7	0.9	0.8	0.8
Labor productivity	4.9	4.1	2.9	3.4
Construction:				
Construction work completed with internal resources	2.8	2.3	3.7	5.5
Average number of workers	-0.4	0.5	0.5	0.9
Labor productivity	3.3	1.8	3.1	4.6
Housing units delivered by contracting enterprises	-20.6	13.6	-3.4	4.1
Procurement:				
Slaughter animals (including poultry)	5.3	4.3	2.6	4.1
Milk	4.9	9.0	1.0	3.4
Eggs	2.9	0.3	3.2	3.6
Retail trade:				
Of the main trade systems	4.0	6.6	3.7	2.3 ²
Foreign trade: ³				
Exports to socialist countries	23.1	•	7.0	7.1
Exports to nonsocialist countries	29.7	•	14.7	14.6
Imports from socialist countries	23.8	•	9.9	9.9
Imports from nonsocialist countries	48.3	•	15.3	12.5
	<u>Oct</u>	<u>Nov</u>	<u>Jan- Dec</u>	<u>Federal plan¹</u>
Total sales (for organizations included in the federal plan)	3.5	3.4	2.9	•
Of which:				
Investments	-4.1	5.1	2.0	-8.7
Domestic trade	8.2	5.6	2.3	4.6

[Table continued on following page]

	<u>Nov</u>	<u>Dec</u>	<u>Jan- Dec</u>	<u>Federal plan¹</u>
Exports (in the plan)	3.7	10.7	3.8	5.8 ⁶
Other sales (including exports not in the plan)	2.9	3.6	3.1	•
Investment work and deliveries (excluding Action 2 and other self-help)	1.6	3.3	1.3	1.9
Of which:				
Construction	-3.5	3.4	1.2	6.2
Machinery and equipment	9.3	3.2	1.4	-3.6 ^{4,7}
Personal cash earnings ⁵	3.8	4.2	3.5	4.4 ^{4,7}
Of which:				
Wages	3.3	3.8	3.4	3.3 ⁷
Actual consumption expenditures	7.8	5.1	3.2	3.3 ^{4,7}

1. Increments compared to actual results, for work indicators in industry plan adjustment as of 4 September 1979.
2. All trade systems.
3. Data on actual results for November refer to actual transactions and does not include unplanned actions in the framework of cooperation, unplanned reexport trade operations, barter, tied trade transactions, etc., data JAN-DEC planned results.
4. Including estimated interest for loans.
5. Monthly data calculated according to the treasury plan of the Czechoslovak State Bank.
6. Increments compared to the expected 1978 results.
7. Planned growth calculated according to definitive PPVO balance for 1978 and federal plan 1979 (adjusted by measures adopted in connection with adjusted retail prices in 1979).

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CSO: 2400

CZECHOSLOVAKIA

PROSPECTS FOR MICROPROCESSOR-BASED CONTROL, ROBOT PRODUCTION DISCUSSED

Overview of Situation

Prague HOSPODARSKE NOVINY in Czech 11 Jan 80 pp 8-9

[Jan Prochazka and Zdenek Skoda interview with Eng Milan Furech, Deputy Director for Development, TESLA Kolin: "Already Beyond Experiments"]

[Text] Every responsible official and person with initiative in our industry must deal with the question of where and how to improve the utility value of his products, their exportability, and the effectiveness of his power and manufacturing equipment by the use of control electronics. See, for instance, earlier articles in HOSPODARSKE NOVINY Nos 39, 44 and 45 for 1979. We must inevitably embark on untried paths. However, for truly creative people these paths are immensely interesting and promise unexpected results. Important among the institutions which are to play a key role in the electronicization of our economy is TESLA Kolin. We spoke with its Deputy Director for Development, Engineer Milan Furech.

[Question] Many people speak about Czechoslovakia's lagging behind. What has caused this?

[Answer] An important role at the beginning of microprocessor technology was played by the embargo. We obtained our first products with some difficulty, by a roundabout route and much later than other producers abroad. We were short on information as well. In components it is estimated that we are 7-9 years behind; in final products we are not a great deal below the European level, for instance that of Siemens. Siemens placed control systems with microprocessors and large scale integration [LSI] components on the market for the first time three years ago. In the kind of systems with which we are concerned, we are about six years behind the top companies worldwide and about four years behind the European companies.

I don't think that it is impossible to decrease this gap quickly. The main thing is to stabilize it rapidly. How? Our production facilities must start showing results. Only after we have results that are going into production can we say whether the gap is increasing, is stabilized, or is decreasing.

[Question] We have already taken the first steps. The Intel model has been chosen to be the basis of our microprocessors. Why was Intel chosen? Does this assure compatibility with other systems? Does it apply only to Czechoslovakia, or is it more extensive, CEMA-wide?

[Answer] When we began to concern ourselves with microprocessors at TESLA four years ago, we chose the Intel 8080. It turned out to be a good choice, because we got a slight head start over a number of other organizations in Czechoslovakia. The decision to focus on this system was made two years ago with the participation of the Federal Ministry of Telecommunications and Radio, the Federal Ministry of Machine Building and the TESLA Economic Production Unit.

Clearly this was not an isolated decision. We took account of the other CEMA countries' orientations, and not only as regards basic components but in particular with reference to applications. There are thousands of them; the most important are in computer engineering, such as the SMEP--the System of Small Electronic Computers. The 8080 system is the standard in most CEMA countries.

[Question] How is it possible that Intel, with its small and young organization, is setting the tone in this way?

[Answer] I think that in new undertakings the importance of a company cannot be decided solely by its number of employees or its turnover; it is also necessary to take account of its assortment, the level of specialization and the results achieved. Small operations can stand up to giant companies that are already up and running only if they are progressive enough. In addition, cooperation is quite extensive in the LSI components field.

A number of small firms perform only a few operations, limiting themselves for example solely to the designing of photomasks for applying circuit layouts to silicon chips. There are well-known companies in Asia which do nothing but attach contacts to chips produced by other companies and package them. It is impossible to say where some components were produced, for perhaps eighteen countries are involved.

Intel is not a final producer of large products. It engages in the production of components and especially of programming equipment, but it does not produce whole control systems. This it leaves to others.

[Question] And how are you fitting yourself into the cooperation process?

[Answer] Our enterprise is concerned with applications and not with the production of components. We must look at cooperation from this angle. We have contacts with a number of production facilities in Czechoslovakia. And in the production field we are involved in cooperation with CEMA.

Two years ago, for example, a working group for NC [numerical control] technology was created. Engineer Marhula, the Deputy Director for Technical Matters at TESLA-VUST, was named as the permanent member for Czechoslovakia. In his advisory committee, our enterprise is represented by Chief Designer Engineer Hlubocky and by me; also represented are other production facilities which are involved with NC equipment in some way: the Research Institute of Machine Tools and Metalworking, ZPA [Machinery and Automation Plants] Kosiře, MEZ Brno and others. Other organizations send workers to these discussions as needed.

Another example: a year and a half ago, a bilateral interministerial agreement on cooperation was concluded with the USSR, more specifically between the Federal Ministry of Machine Building and the Ministry of Instrument Making. The Soviet ministry was represented primarily by LEMZ [Leningrad Electromechanical Plant]; this is the USSR's largest producer of control systems. The first results are already in: in the autumn we successfully tested one of our devices at LEMZ, and we are now holding meetings which might result in a new agreement on production specialization. We have already done this for several items.

[Question] At whose instance do you undertake development work? At that of the management of the TESLA economic production unit, the Machine Building Works, or Elitex, or is it perhaps the future users who initiate the process on the basis of their long-term plans for technical progress?

[Answer] Each conception is worked out by at least two parties, the requester and the designer. We try to exert an influence on the conception of the requester, e.g. a state task coordinator, in such a way that accords with our production conditions and at the same time is consonant with other tasks. In this way we can make use of common features, unify, make use of our assortment, employ an individual subsystem as a component of several systems, and thus also achieve high labor productivity and especially high output. In the case of the first unit for lathes, the cooperation was ultimately three-sided, including the Research Institute of Machine Tools and Metalworking as requester, TESLA as designer, and Kovosvit Sezimovo Usti as user; this led to good results.

[Question] And how does this hold true for the state of microprocessor electronics applications in our industry?

[Answer] This is a very perceptive question, but a number of people know this problem only from a distance. The literature indicates that 22,000 to 25,000 specific microprocessor applications are known. We deal primarily with control of metal cutting and forming tools, textile machinery, robots, sheet injection machinery, casting machines and a few other types. As a

consequence, in this enterprise we are designing for tens rather than tens of thousands of cases.

In 1979 we put into series production the first application using micro-processors: a lathe control unit for Kovosvit Sezimovo Usti. This year we will be working on applications for vertical lathes for TOS [Machine Tool Factories] Hulín; in addition TOS Celakovice is greatly interested in control of gear-cutting machinery. We are designing milling machines for TOS Zobrač, among others. For the textile machinery industry, we hope to design several types of knitting machines. We have begun developing programmable microprocessor-based automated units. In cooperation with the Research Institute of Forming Tools and the Smelt Plants in Brno, we hope to apply a control system to a turret-type coordinate-controlled punching press [vysekavací lis]. We also have the task of involving ourselves with transport and handling and the application of microprocessor control to storing equipment in warehouses. But this does not apply only to warehouses: in flexible production systems, supply and transport are a full component of the process equipment. In such cases the transfer of data to a higher-level computer is also involved. We must design for optimal distribution of intelligence and partly independent operation of a system, even in case of a malfunction in which the higher-level computer is absent.

[Question] So that certain users--the most agile--are getting their equipment. But equipment by itself is not enough: we know from the experience of other countries that we can expect to encounter a software barrier. How is TESLA Kolin approaching this circumstance?

[Answer] Anyone who becomes closely acquainted with the problems of specific applications runs into a major problem: how to control the programs. It cannot be done with pen and ink. It is necessary to carry on a dialog with the microprocessor system, to have the capability of translating the entries for individual steps into intelligible form. And this is made possible by development systems.

But one Intel system costs more than half a million korunas of exchange--or perhaps a million in round figures. This is not a cheap item, but we need to have a lot of them. Here at TESLA Kolin alone we will require at least six of them in 1980 and at least ten in 1981. Because we have not had the opportunity to import them, we have undertaken to produce them ourselves. There is no state assignment for this. But it has worked out. Beginning in 1981 we hope to put these development systems into series production: about 100 a year. This would fully meet Czechoslovakia's initial requirements.

The creation of software must be carried out primarily by the producer of the control system, i.e. by us, for of course it takes an expert to debug it and adapt it to specific requirements. But he can only create a program if he has his own work place. That is to say, we do not have the capability--nor does any company in the world--to solve every programming detail, even

for a limited number of products. Kovosvit for one has come to grips with this matter effectively and hopes to produce software composition stations in an extremely short time.

Currently, components are the limiting factor--but I believe that this problem can be solved by a crash effort. They we will have the hardware; but expansion of applications will bog down if we do not have enough trained people and equipment for development of the software. That would be when the software barrier would appear.

[Question] Would it make sense to teach such equipment in colleges?

[Answer] That is definitely considered highly necessary, but not only in colleges.

[Question] Are they equipped for it?

[Answer] No. I know of a few units, but they are only in the main higher education centers. But there are not enough: it would take dozens. We consider it necessary for the students to have many hours of training, and for each of them to have the chance to try it out for himself.

[Question] Supposing we get the components base into shape. Then it would be up to you here in Kolin. Are your capacities such that they can satisfy the interests of users--not the interests today, when the possibilities are not yet known to the applications people, so that they neither have experts yet nor are thinking in concrete terms about electronics, but when things get up to speed? And then there is the matter of putting them across on foreign markets.

[Answer] To start with, we must limit our assortment. It is clear that we will do what we are required to do, namely machine control. While the labor intensity of the hardware control systems that we currently have in production--which do not use microprocessors--is in the vicinity of 5-6 standard hours per thousand korunas of output, the labor intensity for modern products (which are often called software products because a significant proportion of their value is in the software) will be as little as half that.

Thus our capabilities will be at least doubled. Finally, looking ahead to the next five-year plan, we will have excess capacity. Clearly we propose to expand our number of applications. There are buyers we don't know about yet--because they don't know either.

Mapping out requirements is a continuing process. We have taken soundings at the general management level. But agreements with economic production units are concluded only for the largest buyers. These are, for example, the Machine Building Works or Elitex, as already mentioned, or the General Machine-Building Plants. But the Skoda economic production unit, for example, has no such agreement with the TESLA economic production unit, because its requirements are considerably less.

Whenever this enterprise finds out about such purchasers, we hold direct discussions with them. For example, we have gotten in touch with Zdas to see what they might need. And this is not a minor matter for that enterprise.

We have also taken account of the possibility of direct export. If we can export our components indirectly with machine tools and other equipment--and not in small amounts (approximately 50 percent, and over 95 percent in some fields)--and they function well, we will be able to guarantee good serviceability as the machinery becomes simpler. Then service intervention will be simpler as well. We calculate that direct export could take up as much as 25 percent of our output during the next five-year plan.

[Question] How do things stand as regards equipping robots with control systems.

[Answer] VUKOV Presov, as coordinator of robotics, has the task of seeing to robot production; about 7,000 are slated to be produced during the next five-year plan. As regards investment limits, however, the situation is that it will be possible to free up user resources for the purpose sufficient for no more than 3,000. However, we are sceptical as to whether this number will be produced. Why? Other than VUKOV, none of our four potential producers has availed itself of a contract with us for preparation for deliveries in the next five-year plan. This is called the state of readiness. The control systems are being taken exclusively by VUKOV, and its manager Engineer Valdimir Cop has arranged that to a certain extent they are being stockpiled for the production capacities which they have.

Regarding robots as currently conceived, i.e. with stop control, where neither the path of motion or other parameters are defined, but only the stopping point, we are capable of satisfying all requirements today and in the next five-year plan. But as regards robots with dependent control, the problems will be fundamentally greater. Research and development in this field is just getting under way. We have promised--and we will keep our promise--that this year we will supply VUKOV with a set including micro-processors for this application so that they will be able to work on the actual basis of the control system. But I am afraid that this work will proceed substantially less well and that requirements for these robots during the next five-year plan may not be met.

[Question] Are the sensors and performing mechanisms which come before and after the electronic control units in robots keeping pace with the development of the latter?

[Answer] In my view, the required components have not been made available in the proper proportion. Hitherto the performing mechanisms for robots have come primarily from import, and accordingly domestically-produced equivalent robot parts have become a major problem. We have been informed of certain measures that have been undertaken in Czechoslovakia, such as focusing TOS Rakovnik on hydraulics and the like. This may perhaps achieve its purpose before long.

Electronics has led to another industrial revolution. But it requires truly major investments, not only material but also in terms of people, as well as faith in the undertaking and support for it. These last are major prerequisites.

What is being done today in microelectronics worldwide is just a beginning. The history of every field shows a development following a Gaussian curve. Experts predict that the world has just reached the threshold of the age of microelectronics and that the really revolutionary developments are to be expected in the near future. This does not apply only to TESLA, where our industry is rising to this level, but involves a great forward step in the efficiency of the entire national economy.

Situation at VUKOV Presov

Prague HOSPODARSKE NOVINY in Czech 11 Jan 80 pp 8-9

[Article by VUKOV Presov director Engineer Vladimir Cop, Candidate of Sciences in Slovak; described as extract]

[Text] In applying microelectronics components in production automation we deal with not only the machines themselves but with replacement of the human functions. These functions consist of operating the machinery, monitoring the production process, transmission of information for its optimization, and monitoring of the correctness of the positioning of workpieces, their dimensions, tolerances and the like. Using microelectronics, implementation of these automated functions has become simpler, cheaper and quicker. In particular, the barrier of low reliability which existed when these functions were carried out mechanically or by relays has been overcome.

In employing LSI components, simple computers and the relevant software we have gained direct experience in the development of control systems for industrial robots and automated production systems.

For controlling the movements of industrial robots, which are suitable for industrial operations such as arc welding, we use a microcomputer which we designed and constructed based on the single-board SBC 80/10 computer and LSI components.

This control computer is suitable for controlling not only industrial robots and manipulators but other industrial equipment as well (NC machine tools, textile equipment and the like).

For this type of control computer hardware we have also created software for the control of industrial robots.

The use of the Intel 8080 microprocessor is in accordance with the plans for production and utilization of microprocessors in Czechoslovakia.

Using this LSI-based computer we decreased our planned operating expenditures by more than 200,000 korunas from those for a control system designed with SSI [small-scale integration] and MSI [medium-scale integration] components, while cutting electrical consumption by a third. In addition, the space requirement is only a tenth that initially planned for.

The use of LSI components is also steadily increasing whole-system reliability.

In our view the primary problem is availability of these components and systems following secondary production [opakovana výroba]. It turns out that the synthesis of special-application components can be done by qualified engineers and technicians without any great difficulty. But attention should be given to preparation for the development of software for different uses for which these microelectronic systems are intended.

Microprocessors for NC Machine Tools

Prague HOSPODARSKE NOVINY in Czech 11 Jan 80 p 9

[Article by leader of consolidated brigade Jozef Kral, Sigma Hranice national enterprise; described as extract "on the further development of the consolidated brigade movement in the Sigma economic production unit"]

[Text] Our technical experts have made a very positive contribution to the brigade in at least two matters of especial importance which have enabled us to expand and refine our previous commitments. Primary among these is the development, design and production of a special type of control system for conventional machine tools. The first device of this type, the DZ-630/SZ, has been developed, tested, installed and put into operation on schedule, controlling three machine tools in a facility where it is operating under the same conditions as NC tools. Following their previous development and production of the special Z-400 NC tool, this new initiative from the development engineers, electrical designers and workers in the mechanization center gives further assistance in solving the problem of a shortage of NC machine tools on our market.

Photo Captions

1. p 8. Last year TESLA Kolin marked 60 years of operations. The enterprise, which today has 2,500 workers and every year produces goods worth over 250 million korunas, began in 1919 Czechoslovakia's first production of telecommunications components. To the manufacture of interurban communications equipment it later added airfield equipment and, in the last decade, digital systems. These three areas now account for the majority of its production program. However, it will be gradually increasing its output of programmable automatic devices, measuring sensors and position indicators. Photo: Jana Pohorela works with equipment for automatically connecting the electronics frame to a system of NC machine tools.

2. p 9. The attention of efficiency improvers at TESLA Kolin is directed toward decreasing labor intensity and production costs. By the end of May 1979, workers and technicians had made more than 80 efficiency improvement suggestions. Of these, 44 have been accepted and 42 put into production. The saving last year alone was more than 600,000 korunas. Ferrite transformers are now assembled by a new method. Electronic equipment mechanic Jiri Puchalek tests and powers up the input units of an NS 910 programmable automatic system.

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CSO: 2400

BRIEFS

LABE RIVER TRAFFIC--The significance of the Labe waterway is growing. A total of 8,866 ships moving 1,507,777 tons of cargo moved through the Lovosice Locks in both directions. For this purpose it was necessary to fill up and let out the large and the small water locks 4,154 times. Passed through were loads of sand, salt, containers, and others, and up to 13 June of 1979, also coal fuels from Vanov to Chvaletice. On this day the last tug boat went through the locks heading for the Chvaletice power station. The coal was reloaded at the newly built reloading station at Lovosice-Prosmyky. The load then went through the closest upriver locks at Ceske Kopisty. A total of 15,692 ships carrying 2,200,874 tons of cargo passed through these locks. From this total 9,685 ships carried 1,476,761 tons of coal from the Lovosice-Prosmyky reloading station for the Chvaletice power station. [Text] [Usti nad Labem PRUBOJ in Czech 13 Jan 79 p 1]

CSSR SEARCH FOR OIL--Workers of the concern enterprise Moravske [Moravian] Naftove Doly in Hodonin drilled almost 102,000 meters of soil during a geological search for crude oil. Work on 107 bore holes was done in Moravia and in Slovakia enterprises Luzice, Gbely, a Michalovce. The deepest hole in Moravia was bored in Nemcicky where they went down to 3,937 meters; in Slovakia the Ernest Bolebruch brigade exceeded the 6,000 meters planned depth by going down to 6,505 meters on the Sastin 12 exploratory well, achieving a CSSR record depth. Even though the CSSR is not among the significant crude oil producers, nor does it have a world status in production of natural gas, the government is expending considerable sums for search and exploration for these minerals. Our oil is mostly of higher quality than the foreign crudes and specialized refineries have a particular interest in it. Our natural gas, with its more than 95 percent content of methane without any sulphur, is also of very good quality. After some of the gas reserves are exhausted they are being considered for conversion to underground gas reservoirs. [Text] [Brno ROVNOST in Czech 21 Jan 79 p 3]

CSO: 2400

LAW ON 1980 STATE BUDGET PUBLISHED

Budapest MAGYAR KOZLONY in Hungarian No 92, 27 Dec 79 pp 1483-1486

[Law No III/1979 Concerning the 1980 Budget of the Hungarian People's Republic]

[Text] With due consideration for the provisions of Law No II/1979 Concerning State Finances (hereinafter APT), the National Assembly has enacted the following law:

Principal Sums of the State Budget

Section 1. The National Assembly adopts the 1980 budget of the Hungarian People's Republic with

423,500,000,000 (four hundred twenty-three billion five hundred million) forints of revenue,

428,000,000,000 (four hundred twenty-eight billion) forints of expenditure, and

4,500,000,000 (four billion five hundred million) forints of deficit.

Section 2. Fulfillment of the estimates of revenue and expenditure, in the interest of the national economic plan's realization, must be substantiated by raising the effectiveness of economic activity and through the economic use of resources.

Breakdown of Revenue

Section 3. Taxes and other payments by enterprise organizations--without the payments pursuant to Section 4--amount to 298,029 million forints, 70.5 percent of total revenue.

Section 4. Social-security and pension contributions by enterprise organizations, budgetary organs and the population amount to 54,870 million forints, 12.9 percent of total revenue.

Section 5. Taxes and duties paid by the population amount to 10,116 million forints, 2.4 percent of total revenue.

Section 6. Transfers from the budgetary organs' revenue to the state budget amount to 10,370 million forints, 2.4 percent of total revenue.

Section 7. Various revenues from international financial relations, domestic credit transactions and other sources amount to 50,115 million forints or 11.8 percent of total revenue.

Breakdown of Expenditure

Section 8. Expenditures for investments, for supplementing the councils' development funds, for aiding private housing construction, for advancing circulating capital in conjunction with certain state investments, for supplementing the enterprises' development funds and for central stockpiling may amount to 70,450 million forints, 16.5 percent of total expenditure.

Section 9. Tax refunds and subsidies to aid the production and marketing of enterprise organizations may amount to 127,179 million forints or 29.7 percent of total expenditure.

Section 10. Expenditures for social-security tasks, including family allowances, sick pay, child-care allowances and other cash aid, medical care, pensions and other provisions, and for supplementing the pension fund of agricultural cooperatives, industrial cooperatives and private artisans may amount to 77,552 million forints or 18.1 percent of total expenditure.

Section 11. 1. The amount earmarked for tasks performed by budgetary organs is 118,038 million forints or 27.6 percent of total expenditure.

2. The amount specified in Paragraph 1 may be used as follows:

For health and welfare tasks, including the maintenance of hospitals, clinics and other institutions providing in- or out-patient care, the protection of mothers, infants and children, the public-health and epidemiological service, furthermore for other health and welfare objective, and contributions to the operation of recreational centers - 20,535 million forints or 4.8 percent of total expenditure;

For cultural tasks, including the maintenance of elementary and secondary schools, higher educational institutions, scientific-research, cultural, artistic, child- and student-welfare institutions and sports facilities - 34,621 million forints or 8.1 percent of total expenditure;

For defense - 16,360 million forints or 3.8 percent of total expenditure;

For the maintenance of law and order - 10,767 million forints or 2.5 percent of total expenditure;

For central and local public administration - 6,523 million forints or 1.5 percent of total expenditure;

For the maintenance of roads and bridges by budgetary organs, and for municipal and community, agricultural, water-conservation and other economic tasks - 20,280 million forints or 4.8 percent of total expenditure;

For the renewal of the budgetary organs' fixed capital and their other tasks - 8,952 million forints or 2.1 percent of total expenditure.

Section 12. The amount earmarked for international payment obligations, debt servicing, reserves and other budgetary tasks is 34,781 million forints or 8.1 percent of total expenditure.

Estimates of the Central Budgetary Organs

Section 13. Within the amounts specified in Section 1, the National Assembly sets the revenue estimates, augmented by the social-security and pension contributions, of the central budgetary organs under separate budget headings at 60,595 million forints, and their expenditure estimates at 134,393 million forints, as detailed in Supplement 1.

The Councils' Budget and Development Fund

Section 14. 1. The National Assembly sets the revenue of the councils' 1980 budget and development fund in accordance with the provisions of Paragraphs 2 to 4.

2. The sources of revenue for the councils' operating budget are:

a. Own sources of revenue:

The operating revenue of the budgetary organs under the councils' supervision,

The taxes levied by the councils on the population, and the cash fees and duties collected by them.

b. Shared sources of revenue:

The agricultural cooperatives' land tax, income tax, and 50 percent of their municipal and community contribution.

c. State contribution: 42,861 million forints, which includes 50 percent of the municipal and community contribution by the state enterprises, industrial, consumer, marketing and purchasing cooperatives, and cooperative enterprises operating on the councils' territory.

3. The sources of revenue for the councils' development fund, respectively for the communities' development estimate, are as follows:

a. Own sources of revenue:

The population's community-development contribution,

The land tax, and the contribution for the development of roads and public utilities,

The land-use and land-requisitioning fees paid by state enterprises, industrial, consumer, marketing and purchasing cooperative, and cooperative enterprises operating on the councils' territory,

Other revenues defined in special statutory regulations.

b. Shared sources of revenue:

Fifty percent of the agricultural cooperatives' municipal and community contributions,

The centralized depreciation of the state enterprises operating under the councils' supervision.

c. State contribution: 24,963 million forints which includes 50 percent of the municipal and community contribution by the state enterprises, industrial, consumer, marketing and purchasing cooperatives, and cooperative enterprises operating on the councils' territory.

4. The Budapest Municipal Council, the megye councils, and the councils of cities with megye status are fully entitled to the revenue from the sources specified in Paragraphs 2 and 3, with the exception of the municipal and community contribution.

Section 15. A breakdown--by the Budapest Municipal Council, the megye councils, and the councils of cities with megye status--of the state contribution to the councils' operating budget and development fund, as specified in Section 14, is contained in Supplement 2 to this law.

Final Provisions

Section 16. The provisions of APT Section 17, Paragraph 2, Item a, apply to the modification of the estimates specified in Sections 3, 4, 9 and 10 of the present law.

Section 17. The present law becomes effective 1 January 1980.

Section 18. When the present law becomes effective, Law No 5/1975 will be rescinded.

Dr Rezső Trautmann, deputy chairman
of the Presidential Council of the
Hungarian People's Republic

Imre Katona, secretary
of the Presidential Council of
the Hungarian People's Republic

Supplement 1 to Section 13: Revenue and Expenditure Estimates of the Central Organs Under Separate Budget Headings (1000 forints)

Designation	Total Revenue	Total Expenditure
National Assembly, Presidential Council of People's Republic	1,200	90,748
Council of Ministers	46,715	669,426
Ministry of Domestic Trade	16,059	600,060
Ministry of the Interior	75,100	7,400,000
Ministry of Health	135,000	5,071,116
Ministry of Construction and Urban De- velopment	13,700	253,590
Ministry of Defense	170,000	16,360,000
Ministry of Justice	315,488	1,403,662
Ministry of Metallurgy and Machine Industry	5,113	122,282
Ministry of Light Industry	4,239	84,660
Ministry of Communications and Post	249,337	7,514,205
Ministry of Foreign Trade	11,952	921,153
Ministry of Culture	13,108	1,065,900
Ministry of Foreign Affairs	107,210	1,012,454
Ministry of Agriculture and Food	293,680	3,772,086
Ministry of Labor	18,412	184,404
Ministry of Heavy Industry	42,102	176,026
Ministry of Education	301,979	3,843,520
Ministry of Finance	29,191	568,019
Central Geological Office	35,260	806,290
Central People's Control Committee	1,711	73,141
Central Bureau of Statistics	30,211	578,411
Supreme Court	65	27,902
Hungarian Radio	9,941	855,033
Hungarian Television	1,764,711	1,618,199
Hungarian Academy of Sciences	101,780	1,156,293
Workers' Militia	500	480,000
Office of the Prosecutor of the People's Republic	1,356	202,514
National Materiel and Price Office	91,380	49,085
National Technical Development Commission	73,474	283,577
National Planning Office	16,017	127,867
National Office of Physical Culture and Sports	4,435	485,260
National Water Bureau	129,277	1,823,906
SZOT [National Council of Trade Unions]		
Chief Directorate of Social Security	55,772,725 ²	71,427,353
SZOT Chief Directorate of Recreation and Sanatoriums	211,400	707,250
All central organs	60,095,828	131,815,392
Reserves ¹	499,312	2,577,400
Grand total	60,595,140	134,392,792

[Footnotes on next page]

Footnotes to Supplement 1:

1. The reserve is for central renewal tasks and other specified objectives.
2. Includes also social-security contribution payments.

Supplement 2 to Section 15: State Contribution to the Budget and Development Fund of the Budapest Municipal Council, Megye Councils, and the Councils of Cities With Megye Status (1000 forints)

Designation	State Contribution to	
	Budget ¹	Development Fund ¹
Capital city of Budapest	11,899,858	10,239,670
Baranya Megye, including	1,818,786	1,126,871
Pecs, city with megye status	781,171	915,842
Bacs-Kiskun Megye	1,451,066	824,691
Bekes Megye	1,106,882	469,419
Borsod-Abaúj-Zemplén Megye, including	3,765,433	1,771,226
Miskolc, city with megye status	1,192,844	1,236,965
Csongrad Megye, including	1,798,385	1,517,192
Szeged, city with megye status	872,710	1,139,139
Fejér Megye	1,463,919	882,250
Győr-Sopron Megye, including	1,712,808	941,152
Győr, city with megye status	509,677	527,926
Hajdu-Bihar Megye, including	1,921,268	1,288,223
Debrecen, city with megye status	842,645	932,588
Heves Megye	1,254,908	466,321
Komarom Megye	1,248,716	503,404
Nógrád Megye	1,209,217	333,168
Pest Megye	1,609,351	920,122
Somogy Megye	1,464,541	409,732
Szabolcs-Szatmar Megye	2,302,865	865,529
Szolnok Megye	1,486,951	553,365
Tolna Megye	947,441	311,534
Vas Megye	1,367,823	317,508
Veszprém Megye	1,668,451	619,286
Zala Megye	1,362,468	333,862
Reserve		268,000
Total	42,861,137 ²	24,962,525

Footnotes to Supplement 2:

1. Including the municipal and community contribution.
2. Over and above this, 100,000 thousand forints of aid for the renewal, modernization and maintenance of roads and bridges, and 851,000 thousand forints of aid for the renewal and maintenance of residential buildings are included in the central estimates.

COMPUTER UTILIZATION IN ECONOMIC PLANNING ELUCIDATED

Budapest KOZGAZDASAGI SZEMLE in Hungarian No 1, Jan 80 pp 12-21

[Article by Dr Jozsef Sivak, deputy director of the Computer Technology Center of the National Planning Office: "Computer Technology in the Modernization of Economic Planning Methods"]

[Text] The use of mathematical methods and computer technology tools came up together with the requirement to modernize planning methods. There are many reasons which made it necessary to modernize planning methods and most of those pose new requirements. The constant change and increasing complexity of economic conditions had such an effect, for example, but in addition the constant harmonization of the theory and practice of planning also requires continual modernization activity.

Interpreting the connection between the use of mathematical methods and computer technology tools and the modernization of planning methods was a frequently debated question in years past. This connection was interpreted differently by those who approached the problem from the side of mathematical methods and by those who used "traditional" methods.

In my opinion one should approach an interpretation of this connection from the side of the planning task and the peculiarities of planning. The planning process is a combination of different types of interlinked activities. This includes discovering the facts of reality and observing and recording the functioning of economic laws and the phenomena of development. This process includes a study of the future paths of development, stressing the most important interdependencies and creating a harmony among them, working out the various action alternatives, selecting among the alternatives and clarifying the consequences which will accompany the selection of different alternatives. These complex processes take place in the following phases: analysis, prediction, coordination and guidance.

The process of working out plans is an iterative process. A gradual harmonization of economic possibilities and needs takes place in the course of plan preparation. The iterations clarify the links between part processes and aggregate processes, the interdependence between indexes which refer to

the past and those which refer to the future and the links between goals and the means for stimulating or influencing the attainment of the goals.

From time to time economic planning must solve new tasks and this expands the content of planning. Most recently, for example, such a new element of planning has been paying attention to the links developing between social processes and the new world economic situation. Recognizing the constantly changing and increasingly complex reality and forecasting and influencing processes make it necessary to develop suitable methods in harmony with the changing requirements. Accelerating the process of analysis and coordination and making the iterations more organized and swifter are similarly important factors for comprehensive and well founded analysis and prediction.

It is generally recognized today that the need for quantification and the use of mathematics are inseparable adjuncts to most of the planning tasks to be solved. The development of science and technology and the accumulation of practical experience make it possible to use modern mathematical methods in more and more areas for the modernization of planning methods. Thus the introduction of mathematical methods becomes an important step in the development of methods already existing.

Computer technology became part of the modernization process only in the last one or two decades. This goes back to the more profound quantitative analysis and makes possible the computer solution of complex mathematical procedures and models. This link also appears directly because with the use of computer technology tools it becomes possible to directly aid the several steps of the planning process also (for example, the swift and systematic processing of large volumes of data).

It appears from all this that the planning use of mathematical methods and computer technology tools simultaneously affects three independent scientific disciplines: planning, mathematics and computer technology. By the planning use of mathematical methods and computer technology tools we mean that we use mathematical procedures or models to carry out tasks arising in certain phases of the planning process, making use of the possibilities provided by a computer and exploiting the advantages thereof. In what follows, when we examine the development of applications and the role of computer technology in the modernization of planning methods, we are always starting from this link.

The modernization of planning methods and the development of computer technology applications unite in a complex process in which the requirements of modernization and the possibilities of applications have a mutual effect on one another. Experience shows, however, that this mutual effect is not always harmonious. For a time the improvement of conditions is the urgent task; at other times it is the rational use of the possibilities. In what follows we will examine the development of applications from the side of changing applications conditions. We will be seeking answers to the following questions: How have the applications areas changed, what trends have

been realized in this process and, finally, what conclusions can one draw from all this for further progress?

The Changing Conditions

The last 10-15 years cannot in themselves be regarded as a long time so at first glance it seems forced to designate developmental stages therein. But if we look not only at the time elapsed but also at the significant changes which have taken place in the planning use of computer technology then temporal distinctions seem justified. Two stages can be designated in the period examined from the viewpoint of the change in computer technology conditions. The two stages are separated from one another by the placing into operation of the Planning Office's own computer.¹

The first stage is characterized by a modest recognition of the possibilities hiding in the use of mathematical methods and computer technology possibilities. In this period we find only a few experimental applications in planning, partly because of the lack of experts but primarily because of the restricted computer technology possibilities. The restricted nature of the possibilities appeared ever more sharply with the increasing needs. This problem was clearly formulated when an experimental national economic programming model was developed in connection with the Third 5-Year Plan: "Planning must be provided with the following:

"1. A computer which is technically suitable for the swift and reliable execution of mathematical programming tasks of relatively large scale using large volumes of data.

"2. Well trained mathematical and computer technology personnel who constantly train themselves further.

"3. The computer programs needed for national economic programming (and other plan models)."²

It was decided in 1968, on the basis of the new work starting on the basis of experience with medium range planning and on the basis of the initial tasks of long range planning and other planning needs, to improve the computer technology conditions of the Planning Office.

The second stage began in 1971 with the placing into operation of the large capacity computer still operating. The formation and gradual development of the Computer Technology Center of the OT [National Planning Office] was also a great step in improving the conditions.

The development which started after the placing into operation of the computer was characterized not only by an improvement in the conditions but also by an expansion of applications possibilities in general. The work received new impetus in 1972 with the formation of the Computer Technology Applications Committee of the OT. In the beginning, in addition to coordinating applications, the committee regarded as its chief task the

coordination of computer technology developments, organizational tasks which increased the integration of applications and discovering possibilities for applications.

In 1974 the State Planning Committee reviewed the status of applications and issued a guide for future tasks.

The two-stage expansion of the computer and the stabilization of the technical personnel resulted in an unambiguous improvement in conditions.

Thus, from the side of conditions, the change which has taken place in the past decade can be characterized by the following:

a. The placing into operation and full development of a modern computer has made possible, and for a long time to come, the satisfaction at a high level of the computer technology needs of planning.

b. A staff of experts has developed which knows how to run and use the computer. There is an increasing number of planning personnel who use the computer independently in their work too, formulating needs which are satisfied by solutions worked out by the developmental activity of the experts of the Computer Technology Center. The formation and stabilization of a staff of experts is a significant achievement not only from the viewpoint of planning applications but also from the viewpoint of domestic mathematical economics research.

c. In recent years the staff of experts has not only become acquainted with and made use of the applications tools purchased with the computer but has developed tools independently too (for example, a general planning program system).

d. It is also a sign of the favorable development of conditions that, especially by the end of the period being examined, the possibilities for expanding the man-computer links have improved from the viewpoint of computer technology tools. Planners can use the computer directly, by means of terminals, and this is creating the foundations for a significant trend in future development.

e. The successful use of mathematical methods and computer technology tools requires the close cooperation of various experts--because of the interweaving of several independent scientific fields. In the beginning the separation of those working in different fields interfered with applications. The new style of work, the development of group activity in which planners, researchers and computer technicians work together in the solution of some planning task, has been of great significance in the solution of problems accompanying this separation. It must be seen also that the separation interfered with the acceptance of the results of computer technology applications. Additional tasks await solution in this area.

The Sphere of Applications

Central planning has used computer technology possibilities to solve many tasks in the past 10-15 years. Three chief trends in applications can be designated in a survey of the tasks solved:

1. The solution of planning models.³
2. Supplying planning with factual data.
3. The mechanization of operational plan calculations.

Research connected with the use of planning models began during the development of the Third 5-Year Plan within the framework of medium range planning.⁴ The large scale linear programming model used in the development of the Fourth 5-Year Plan was based on the experience acquired here; stepping out of the sphere of experimental application this was a reassuring continuation of results achieved earlier.⁵

The model was built up out of part models prepared for the several branches. The planners could take the results of the branch models into consideration when developing the conception but the calculations of the national economic model were completed only after the planned time limit.

A model family consisting of several models was used to develop the Fifth 5-Year Plan.⁶ The elements of the model family were prepared as adjusted to the phases of plan preparation. More aggregated models were used to develop the plan conception (a simulation model, an aggregated dynamic model, an econometric model) which were suitable for an analysis of the most important macroeconomic interdependencies. A proposal prepared for a large scale linear programming model was used to prepare the draft plan.

The models used thus far in the phases of long range planning constitute a new group of planning models. They are unique in that they are based on a common data store and input program system. The system thus developed and used, which works in practice too, is the first uniform computer planning system which solves interconnected tasks.⁷

Modelling possibilities are only being studied in regard to annual planning.

The models being used or recommended for use in the preparation of medium range and long range plans are connected primarily to the synthesizing, coordinating tasks of planning. Naturally, models have also been prepared which pertain to this or that part area or which serve to study this or that special planning problem.

From the viewpoint of computer technology the task of supplying planning with factual data means the following: expanding the sources containing factual data, speeding up access to the data and a complex processing of the data according to the needs of planning.

The processing of factual data is important from the viewpoint of all tasks of planning: it can improve the analytical function of planning and computer processing can accelerate the iteration process.

In the beginning the processing of factual data pertained to unique groups of statistical data. More recently there is an increasing trend within the framework of which it is possible to supply complex data for individual planning areas, systematically processing these in an iterative manner. This work began in connection with foreign trade planning and it is beginning to be included in the systematization of investment data. Processing based on enterprise balance reports satisfies the needs of several planning areas. From the viewpoint of solving this task it is significant that as a result of the swift domestic spread of computer technology there are more and more accumulations of data which can be taken over from other chief authorities directly on magnetic data carriers.⁸ Central measures also aid those efforts which serve to accelerate the substantive uniformization of planning, financial and statistical information.⁹

Because of their complexity, many planning tasks can be solved only with a comprehensive system which contains many interdependencies. But there are also tasks in the everyday activity of planners which can be standardized and which involve few interdependencies. It is of great significance that more and more of these tasks can be carried out on a computer also. We can list such activity in the third group of applications, the mechanization of everyday, traditional plan calculations. In a unique way this area of applications began a swift development only recently. On the basis of initial experiences it can be said that this is a very important area in the planning use of computer technology. One of the problems with applications thus far has been that in many cases the new methods do not reckon with the peculiarities of planning, are not able to follow the changing needs of planning as it reacts to the changes in the economic reality.

After recognizing the above problem it is natural to require the mechanization of the "traditional" methods of basic professional planning. The initial process must be continued in such a way that the mechanization of "traditional" plan calculations will encourage a further development of basic planning and the methodology of expert estimates.

Trends and Experiences

Domestic and international experiences thus far in the planning use of mathematical methods and computer technology possibilities support an increasing spread of these methods and a gradual integration of these methods into the traditional methodology. Progress in individual part areas, the mechanization of tasks in part areas and taking over an increasing proportion of traditional planning functions characterize the initial period of the developmental process for applications.

In the next stage of the developmental process the linking of results achieved in various part areas and the development of larger complex systems

containing more interdependencies will become increasingly important. The changed requirements and the trends beginning with the solution of new planning tasks appear in connection with this.

The increasing complexity of planning tasks poses developmental requirements for both planning methodology and the organization of planning work. There are general problems in this process but there are also special problems which affect only the computer technology applications. If we are to recognize these special tasks it is necessary for us to recognize the trends in the developmental process of applications and get to know the experiences which have been accumulated.

The gradual growing together or integration of computer technology possibilities with planning methods has been a fundamental aspect of the past period. This integration process is indicated, for example, by the fact that the machine time being used to solve various planning tasks increases every year. The increase is taking place in such a way that total machine time use is being divided up among the work of more and more planning areas (planning main departments).

The appearance and later spread of modern tools was concentrated in the past period primarily on synthesizing planning activity which examines consistencies. This appeared in the fact that the results of most of the tasks being solved on the computer were used in the synthesizing medium range and long range planning work which analysed balance conditions. The synthesizing, coordinating planning activity required the use of computer possibilities and advantages in regard to both the processing of factual data and the use of models. Several reasons explain this characteristic of the planning use of computer technology. Starting from planning needs we can consider as a fundamental reason the fact that the prescriptions of the present planning methodology, based on the balance view, which pertain to coordination have been worked out systematically from many sides. The fact that the most experience, looking back on the longest past, in the planning use of mathematical methods exists in this area actually follows from this. The use of the balance of branch contacts, work connected with the synthesized materials balance and the mathematical programming models which study balances and optimums at the product depth are all linked to plan coordination work. The computerized system used in long range planning is also based on synthesis.

For a long time, in the past period, modelling work stood in the center of applications and relatively few of the tasks being solved involved the processing of factual data or the functioning of systems which aid operational planning. This trend is also explained by the increased reliance on the antecedent applications and the experience acquired earlier.

The great majority of the mathematical models used in economic planning affected three areas of applied mathematics: mathematical programming, mathematical statistics and, especially, linear algebra. In the beginning the

use of linear programming and linear algebra played an almost exclusive role. Only in recent years have planning tasks included mathematical-statistical models and the econometric models linked thereto. Judging by results thus far there is a great future for the planning use of stochastic methods.

The process of selecting model types went through a characteristic transformation. In many cases the selection of model types is shot through with subjective elements too. Most frequently in experimental applications what model type is used to approach a problem depends on the preparation and inspirations of the model builder. With increasing information and especially with increasing experience and with the development of definite guidance in applications, however, model applications which start from the priority of the problems, instead of model selection oriented toward methods, are gaining ground.

This trend can be easily seen, for example, in the case of models used in medium range planning. The research done with the large scale linear programming model developed for work with the Fourth 5-Year Plan made it certain that the results of the model would provide information which answered only definite questions of planning and it could not be expected that the model could be used to study all planning questions. It followed from this that we also had to develop models which could give aid in answering questions which arose in various phases of planning. This requirement led to the development of a model system consisting of various types of models which could be flexibly applied to questions posed by the several planning phases.

But a better fitting to the problems of the array of mathematical tools used could not eliminate the methodological difficulties which exist in any case (for example, the need for input data deviating from traditional methods, a swift recalculation of changes, etc.). Here further tasks await solution; they are partly methodological and organizational but they are partly theoretical too.

In characterizing the integration process it must also be noted that, in areas of planning work outside of synthesizing planning, integration has proceeded rather unevenly and in many cases the expansion of areas making use of computer technology has been realized on individual initiative. This circumstance tended to increase the number of ad hoc tasks which were solved on a one-time basis and which are related to one another only very loosely. This appears, for example, in the absence of links between computer technology systems used for calculations pertaining to part areas and the systems used in coordination. It is obvious that the different problems of different planning areas require different solutions but the tasks (and thus their solutions also) come together at a certain level of aggregation.

When underlining the increasing role of computer technology, however, one must point out a basic aspect of this role which will be important from the viewpoint of taking into consideration the requirements to be posed in regard to further development.

Thus far, in the process of modernization, computer technology has appeared primarily in this or that part area of existing planning methodology as an alternative to "traditional" problem solving, or it has been successful primarily in these areas. In many cases the number of the part areas or the degree of integration of computer technology applications has depended on earlier experiences or on personal ambitions, more rarely on methodological constraints. The possibilities hiding in computer technology and mathematical methods are bigger than this. They will also make possible the solution of new, more complex problems which could not be studied with "traditional" tools. The task is to make use of what has been experienced thus far but to reach a qualitatively more developed level in planning also because only this will create the conditions so that computer technology will aid the constant modernization and further development of planning methodology at the level of the possibilities.

The Next Step

More developed forms of computer technology applications are needed because of the increasing complexity of economic tasks and thus of planning tasks. Naturally a better recognition of a reality which is becoming increasingly complex cannot be achieved by the use of computer technology alone. It can be clearly recognized already, on the basis of experience, that one can expect modern results from modern tools only if one has modern methods. Of fundamental importance in this interdependency is the general and constant development of methods serving to recognize reality and analyze existing processes, and of increasing significance in this process--as we said above--is the development of computer technology possibilities.

But the role of computer technology cannot be limited at this point to a necessity justified by quantitative arguments alone. It is obvious, for example, that solving a problem which is twice as complex does not necessarily require twice as much work capacity. Solving more complicated tasks is possible only by changing the technology of the solution. It is recognized on the basis of experience thus far that the solution methods for various tasks in planning--primarily in the basic computations--are relatively independent of one another and so in most cases can be solved as technologically separate tasks. After a more profound recognition of the interdependencies among tasks, solutions which are realized in man-machine links enter the technological line of previously independent man and machine blocks. This process will expand in the future and this will mean that computer technology will have its real effect on the technology of planning.

Two possible strategic lines might be sketched out for the next step in the planning use of computer technology. One is the further integration of applications areas, a line which is strengthening already. The other line of further development is to expand the sphere and role of applications together with a general development of planning methodology. Naturally, these two lines of development pose different requirements for computer technology applications.

Progress along the first line will require the solution of many organizational tasks, the discovery of new applications areas, encouraging the use of tools now available and a linking of separate areas. So this line of development is a continuation of present applications, in a better organized channel, within the frameworks of existing planning methodology.

In sketching out the second line we start from the position that the constant change and increasing complexity of economic processes, and thus the exercise of the cognitive function of planning, absolutely require the development of cognitive and analytical methods. If this is true then it is a just requirement that in the development of new planning methods serving the analysis of the new problems we must start from the fact that we can build on the possibilities of computer technology, on mathematical methods which can be adapted to the new problems. This starting point leads to a qualitatively new level in the solution of new problems. There is already experience in the second developmental line also: this was the central work program worked out at the end of 1976 for the further development of planning methodology. One of the immediate tasks was to encourage the use of the methodological results already achieved (the first strategic line). The second motive--and this is the link to the second developmental line--was to try to give an answer to the newly appearing planning problems by making use of modern methods. The methodological development program stressed the most important of the newly appearing planning problems: methods which serve to take into consideration the social aspects of planning, the mechanization of plan computations, methods serving to study regional planning problems and new methods for planning external economic contacts.

Some of the tasks formulated in the work program were successfully solved and planning methodology was enriched with new achievements. There were such achievements, for example, in the development of a coordinated system of plan computations, in the use of forecasts and in regional planning. Naturally the two lines in the planning use of computer technology cannot be separated from one another. In my opinion it should be possible in the future to increase the modernizing role of computer technology in both developmental directions.

In addition to choosing and becoming acquainted with a developmental strategy we must also define those areas of planning work where the use of computer technology must be expanded, encouraged and accelerated on the basis of experiences thus far. These tasks can be formulated in two large theme areas: a. supplying information for planning, a continual recording, analysis and forecasting of the development of economic processes and an evaluation of plan fulfillment; and, b., the development of models and computer systems for coordination planning work and special branch planning, improving the links between them.

It is unnecessary to explain that these two areas actually contain many complex tasks, themselves of large volume, covering planning as a whole. In any case it is favorable that domestic practice has traditions in both

areas of modernization, as we have seen in a review of experiences and of applications areas. I think that justifying the importance of the above areas requires no further explanation. In regard to the development of the supply of information domestic applications starting with modelling work made it clear rather quickly that the real bottleneck for the planning and decision making system was not so much procedural methods or increasingly complex, better shaded and mathematically significant models but rather the supply of the information needed to use them. The combined development of coordination and professional planning is not the primary problem in the use of computer technology but the development which is needed in this area cannot be imagined without the use of modern tools.

We have said that in the second stage of the development of planning applications the conditions developed favorably. But these favorable conditions will not be sufficient for the next step; the conditions must be further developed also.

A quantitative and qualitative change in applications can take place only in harmony with the possibilities of the tools. After a certain time, satisfying this condition will bring up the development and modernization of the computer technology tool background for planning. We will need to acquire and put into operation tools which are suitable not only for the increasing number of tasks but which also satisfy the needs at the qualitatively most modern level.

In recent years there has been a great development in all socialist countries in the area of the planning use of computer technology. In domestic applications we have tried to pay attention to international experiences. Further development requires that we study even more intensively the results achieved, working up these experiences and increasing the ability of domestic applications to make use of them.

The strong practical orientation has been an advantageous aspect of applications thus far. The "tactics" of the initial development of applications explains the stronger link to practice; becoming acquainted with, adopting and spreading new methods encourages researchers and users to achieve practical results as soon as possible. But this will be truly effective only if we do not lag behind in the theoretical generalization of practical achievements, only if we enrich theory itself by means of a scientific debate of the views being developed in this theoretical generalization. Domestic mathematical economics has made progress in this sort of work only in a few part areas. Planning theory still has things to do in this area.

FOOTNOTES

1. Naturally conditions for applications mean not only computer possibilities but also the existence of experts, the development of organizational frameworks and guidance which orients the applications. It is useful to examine conditions only in harmony with needs. In what follows

we will approach conditions primarily from the side of machine conditions; we will talk about needs later.

2. Janos Kornai: "Concerning a Practical Application of a Multi-Level National Economic Program," KOZGAZDASAGI SZEMLE, No 2, 1968.
3. By planning model we mean a formalized model used in the planning process which was created to examine a definite planning problem. From the side of mathematical tools the most frequently used models are input-output models, mathematical programming models, econometric models and simulation models.
4. In this article we will not turn to a methodological evaluation of the achievements of applications areas but will deal with them only from the viewpoint of the use of computer technology possibilities. Evaluations connected with the model can be found in the literature cited. See the quoted article by Janos Kornai concerning the model for the Third 5-Year Plan.
5. Sandor Ganczer, editor: "National Economic Planning and Programming," Economic and Legal Publishers, 1977.
6. G. Bager: "Concerning a Medium Range Planning Model System; New Directions in the Development of Planning," GAZDASAG, Mar 73.
7. Maria Augusztinovics: "Quantitative Synthesis in Long Range Planning," KOZGAZDASAGI SZEMLE, No 7-8, 1977.
8. For example, the OT regularly receives on magnetic tape enterprise balance reports from the Ministry of Financial Affairs and industrial statistical, household statistical, etc. data from the Central Statistical Office.
9. Lajos Pesti: "Modernization, Development, Coordination--Tasks in the Carrying Out of Council of Ministers Resolution No 2021/1976," in the volume titled "Economic Data Systems," Statistical Publishing Enterprise, 1978.

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CSIKOS-NAGY DISCUSSES NEW PRICE ADJUSTMENTS

Budapest VALOSAG in Hungarian No 1, Jan 80 pp 1-4

[Article by Bela Csikos-Nagy, chairman of the Office of Materiel and Price Control]

[Text] 1. At one time I wrote that if price adjustments would be necessary after 1968, this could be regarded as a critique of the economic reform. What can I say today if I am reminded of this statement?

At the time when we elaborated the elements of the new system of economic management, we assumed that conditions in the world economy were becoming consolidated. Under these assumptions, practice confirmed our expectations. In one of my studies, I justifiably referred to the period 1967-1974 as the golden age in Hungarian economic history.

Already in the first half of the 1970's, however, changes occurred in the world economy that were increasingly unfavorable from our point of view. I have in mind the sharp rise of oil prices, and the price policies that OPEC has been pursuing since then. Inflation on the world market has accelerated, and national incomes are being redistributed internationally. We did not anticipate this. We did not work out a mechanism by which the link between domestic and foreign prices can be ensured, while preserving price stability, even when inflation intensifies on the world market and the terms of trade change significantly. Therefore we initially reacted to the new situation only by freezing import prices. But this interrupted the process of natural evolution, and for this reason we had to resort repeatedly since 1975 to price adjustments.

2. But in what respect does the assessment of the world market today differ as compared with its assessment at the time of the preparations for the 1968 price reform? In this context I would like to refer to the conclusions in my work entitled "Uj Arforradalom Arnyekaban" (In the Shadow of a New Price Revolution).

We are witnessing a change of epoch, one that will be able to restore equilibrium in the world economy perhaps only after several successive, major or minor shocks. Much will depend on whether cooperation among governments can be achieved, based on the reconciliation of national interests and the

minimization of tensions, to guide this transition. We are already late. Unfortunately, there is a possibility that tensions will intensify and trade war will spread, created and maintained by the preservation of the old structure on the one hand, and by the intentions to convert suddenly to the new structure.

Our country's trade-sensitive economy was unable to isolate itself from these effects so far, nor will it be able to do so in the future. In conjunction with the 1980 price adjustments, therefore, I would not venture to repeat the comment I made regarding the 1968 price reform. The new price system will nevertheless be more resistant to the hectic price movements on the world market. We learned from the past. And now we will adhere more consistently to the principle that the function of prices as a guide to sound economic decisions cannot be limited to the day of the price adjustment, rather it must be asserted permanently. In devising the new statutory regulation of the price mechanism, we regarded as decisive flexible adaptation to changes in the conditions on the foreign markets and the domestic market.

3. It is obvious that world-market inflation and domestic price stability can be brought to a common denominator only through an upward revaluation of the forint. Half of this problem has been solved. We have set the starting commercial exchange rates linked to the new price system. The equivalent of a U.S. dollar is 34 forints; and that of a transferable ruble, 28 forints. The question now is what we should do when rising foreign-trade prices depart from the starting prices.

The requirements placed on price policy concern the improvement of equilibrium, currency stability, sensible protection of the price level, reinforcement of price policy's normative nature, and the dismantling of budgetary subsidies. These requirements often are mutually contradictory. Through the joint investigation of their effects it will be necessary to determine the solution that offers balanced economic development. In evaluating this question, we may start out from the following: If the import-price level rises faster than the export-price level, i.e., if the terms of trade worsen, then this cannot be offset by modifying the exchange rates; thus we can unquestionably expect that in such periods the domestic price level will rise as a result of higher import prices. But a rise in the average export-price level must be regarded as the main criterion of the forint's upward revaluation, because this merely passes on the higher prices of import.

Controversy may arise for two reasons. First, because the domestic-price level may rise also independently of the import prices. Secondly, because the rise in export prices will be differentiated by commodity groups. Substantiation of a good price policy will require extensive and careful analysis.

4. So far as the relationship between the price adjustments and the processes of structural change is concerned, I would like to start out from

the October 1977 resolution of the MSZMP Central Committee which considered the long-term strategy of foreign trade and the development of the production structure. Debate on the principles of the price adjustments was still in full force at that time, and for this reason it was not possible to supplement the aforementioned resolution with the questions of the price system. Fortunately, however, many things have been clarified since then. But differences of opinion have not ceased entirely. What is this all about?

The uncertainties of forecasting prices were raised in the debate on an effective production structure. For this reason some persons were of the opinion that value categories should essentially be excluded from economic decisions substantiating the future, and that so-called real criteria should be set. In our opinion, the problems of plan-conforming development can be solved adequately within the framework of the material-technical information system.

In the debate it has been clarified, I believe, that there is no system of technical parameters which alone could serve to define the effective production structure. The problem of prices simply cannot be by-passed. The uncertainty of price forecasts is simultaneously the risk of developmental decisions. Development of the national economy could be sidetracked even with technical solutions that seem the most perfect.

It is entirely preposterous, for example, to evaluate on the basis of abstract criteria our tasks in the production of computers and parts, when we know that in this field the high starting prices of the early 1970's have declined to a fraction of their original level. Or how can we set a long-term (or even an intermediate-term) policy regarding the production of sugar beets, when there is significant price fluctuation on the world market?

Just as the frozen domestic prices cannot perform their function properly, in the same way a frozen production structure cannot be reconciled with economic effectiveness. For this reason we must develop those elements of the system of economic management that enable us to adapt flexibly to the changes taking place in the conditions of the international division of labor.

5. From the preceding it does not follow that we cannot evaluate the production structure's effectiveness until the 1980 modifications of the system of regulation are introduced. Indeed, every price system, in spite of its shortcomings, contains information on the basis of which the soundness of certain economic decisions can be evaluated. I have in mind particularly the programming of economic products, and the value analyses that substantiate this programming.

Furthermore, our principal reserves lie in better adaptation to the requirements of the world market. Consistent quality, scheduled deliveries, the

supply of spare parts, and customer services are the conditions under which profitable commodity transactions can be concluded. The Hungarian economy must be made suitable for this.

I would give priority to the improvement of marketing policy over the production structure's transformation. Not only because this requires no investment and is the cheaper alternative in any case. But also because price losses will appear in any transformed production structure until we learn what customer services are; furthermore, we are unable to determine unambiguously where the production structure has to be transformed. If the sequence is unsound, there is also the danger that the price losses will be topped by capital losses.

Perhaps this is an extreme statement, but extreme thinking prevailed at many places even after the October 1977 party resolution. As could be anticipated, some industrial managers regarded the party resolution as confirmation of their developmental concepts. In simplified form, they subscribe to the following formula: export expansion = structural transformation, and structural transformation = additional investments. It would be disastrous if decisions were guided by this routine, although in some case they unquestionably are.

6. In the present economic situation, from the viewpoint of prices, two questions are of special significance. One is rational management of materials and energy, mandated by our paucity of mineral resources. The other is transformation of the production structure in such a way that the proportion of products which can be exported profitably to any market will increase significantly. This is made necessary by the disequilibrium of our international balance of payments, respectively by the need to slow down and to arrest as soon as possible the process of growing indebtedness.

In the new price system the relative prices of energy will increase by 65 percent in relation to the prices of finished products; and the relative prices of materials, by 35 percent. The change is even more striking if we compare the 1980 price ratios with the ones that were in force prior to the sudden rise of oil prices. In comparison with 1973, the relative rise in prices is 110 percent for energy, and 60 percent for materials. In accordance with the changes in the international value ratios, then, we have tightened those conditions of production technology, product design and plant organization under which energy- and material-intensive products can be marketed profitably.

To provide an incentive for producing products that can be exported profitably to any market, the price system based on production cost is being converted into a competitive price system. Under the new price system the cost of energy and materials will conform to the highest procurement cost; and the producer-price level of the enterprises, to the export-price level in convertible foreign exchange. Profit or loss under such a price system will reflect the enterprise's attained position in international competition, and enterprise effectiveness will reflect the ability to compete internationally.

7. But how does the just introduced three-center price system relate to all this? Under a competitive price system the prices (price increases) of materials and energy can be passed on into the prices of semifinished and finished products only commensurately with the export prices in convertible foreign exchange. This is a fundamental departure from the traditional practice of pricing based on production cost. Under a price system based on production cost, the rising costs of materials and energy do not compel the enterprises to economize. To the contrary, if there is a possibility to choose, then they prefer the more expensive resources. For thanks to the command-directed overhead rates (and perhaps to the profit regulations), the profitability of an enterprise improves if the prices of materials and energy rise; and it worsens if these prices decline.

Of course, the competitive price system can be introduced only in competitive branches of production. The classification of the branches of production as competitive and noncompetitive is based on whether their goods and services participate in foreign trade (in export or import).

Thus the question arose as to how the tendency to squander energy and materials in the noncompetitive production branches under pricing based on production cost could be eliminated, or at least curbed. In conjunction with this question it was decided to employ proportional pricing. This pricing principle can be applied to mutually substitutive goods or similar goods. In this way we finally developed the triple cricle of competitive pricing, proportional pricing, and pricing based on production cost.

8. There is, however, the danger that under the new price system the non-competitive production branches might be at an advantage. Therefore we could not overlook the fact that the actual outlays are the main criterion of forming the price-level "demand" under a price system based on production cost. It is difficult to change the ingrained mentality that associates loss with price obsolescence, not with bad management. According to this mentality, price cannot be a critique of management, and its sole purpose is to ensure the conditions of self-financing for the cost levels formed by developmental, technological and plant-organizational decisions. We must decisively oppose this trend, the more so because laxities in the noncompetitive sectors will naturally affect the competitive sectors, making it more difficult to apply stricter requirements to them.

9. And how are the new financial system and price system able to reconcile in export the incentives based on effectiveness and volume? Here it seemed expedient to employ competitive prices extensively wherever it appears feasible to make the enterprises internationally competitive within four or five years, through plant reconstruction, changes in production technology, product modernization, transformation of the product structure and, last but not least, through the improvement of the enterprises' marketing policies. The permanent and the temporary elements of the tax refunds in export have been employed accordingly.

The two-channel system of tax refund--refund of the linear, usually 10-percent, producer's differential turnover tax added to the exchange rate, and the production-modernization subsidy adjusted to the specific conditions of the enterprise--was introduced in compliance with the provisions of GATT.

The general tax refund is permanent, but the production-modernization subsidy is temporary. The schedule for abolishing individual refunds was announced in advance. In this way the system of refunds exerts pressure for the modernization of production, for the transformation of the product structure and, in the final outcome, for international competitiveness. The assumption is that the curtailment of production-modernization subsidies will be offset by the improvement of economic effectiveness.

10. And finally, how do the 23 July 1979 consumer-price measures fit in with the general price adjustments? These partial consumer-price measures were introduced in accord with the adjustment of producer prices. We raised the consumer prices of certain foods, fuels, electricity, construction materials, shoes and furniture. These measures raised the consumer-price level by roughly 9 percent, and income supplements offset six percentage points of this rise. Naturally, the producer-price adjustments affect the consumer prices also in other areas, since nearly half of the retail turnover and the bulk of the merchandise will be sold at free prices. Trade will gradually implement this levelling price movement, under central guidance, in accordance with the nature of the individual products.

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HUNGARY

OFFICIAL NOTES ROLE OF YOUTH IN AGRICULTURE

Budapest MAGYAR IFJUSAG in Hungarian No 3, Jan 80 pp 6-7

[Interview with Dr Gabor Soos, undersecretary of state at the Ministry of Agriculture and Food Administration, by Janos Cseh--place and date not given]

[Text] I am looking for key words. Ones that express a year's work. I know, of course, that it is in vain, for it is impossible to squeeze into a word 365 days or the hours of responsibility that appear to be either frighteningly long or excruciatingly short. At the same time, the task is easy: the year of 1979 was not lacking in astounding events. There was abundant frost and a shortage of rain. There were burning heat, floods and droughts. In spite of all this, the yield of a few crops were exceptionally high. During the hours of evaluation and planning, we visited Dr Gabor Soos, agricultural and food administrative undersecretary of state. We asked him, what were the final results achieved by Hungary's agriculture.

[Answer] We have closed a difficult year full of problems. Production was slowed down by three periods of drought and spring frosts, and the damage could be rectified only to a smaller or greater degree by human diligence and know-how.

Nearly 10 percent of the wheat was destroyed, the average production was less than planned, and less hay was grown. To make up for the loss, the state has given extensive help to the large socialist enterprises and small producers to help themselves. As a result of this, the corn- and sunflower-growing areas have increased, and second crops planting was twice as large as last year's. It is pleasing to have reached the planned average of production on the enlarged cornfields. The crops of sunflowers, soybeans and sugarbeets were also good.

The supply of vegetables and fruits, in spite of the unfavorable weather, was even. Shortage in fresh spring green peas, for example, was made up--if not eliminated--by an abundance of tomatoes, green peppers and melons and by an even supply. Unfortunately, the crop of certain nuts and

berries was small, but we had a good average crop of apples and grapes. As opposed to these restrained produce results, animal raising was far better. There was a record animal stock in 1979 and a healthy increase in the production of animal products, meat, milk, etc. In summing up, however, I must say that the farmers did a fine job in spite of the difficulties. Although we fell short of the plan, production did not decrease, compared with the high production level of 1978. This makes a balanced food supply for the population and a better exploitation of export possible. At the same time, this year is a warning that the requirements of quality, rentability and efficiency in food production must be implemented to a higher degree to remain competitive.

[Question] A few years ago one of the most urgent problems in agriculture was the exodus of young people. It seems that this trend has slowed in recent years and was reversed in some places where people turned toward the villages. In your opinion, what are the reasons for more and more young people seeing a future in farming and in village life?

[Answer] Since the socialist reorganization of agriculture, its production value has almost doubled while the number of workers has rapidly decreased. It is notable that at present the total number of working hours does not reach 45 percent when compared with the averages of the early 1960's. This was only made possible by an increased use of industrial tools and materials which resulted in an increase of production and efficiency. I will mention only a single example: while earlier 3.5 working hours were needed to produce 1 quintal of corn, in today's industry-like systems, 15-20 minutes are sufficient. It is understandable, then, that manual and physical labor has been and is being more and more replaced by work requiring technical skill and know-how. These technical requirements are not any less than in any other production branch of the national economy. In the period of socialist reorganization, the nearly 1,800,000 agricultural workers constituted 37.7 percent of the population. The decrease of the number of workers following the reorganization was natural. In this period, agriculture had a surplus of manpower for the other branches of the economy. At present, the number of workers is hardly higher than 1 million, which is only 19 percent of the total labor force. If we deduct from this the number of people doing machine repair, assembly, construction, processing, commercial and servicing workers, then the number of people directly involved in agricultural production is about 14-15 percent.

The surplus of workers in agriculture has become minimal today. It cannot be unequivocally stated that the labor force is flowing backwards. One thing is certain, however, that the movement of the labor force has become more even between the different branches. For example, many workers came to agriculture from other areas to do auxiliary agricultural work such as construction, repair, etc. It is pleasing that the ratio of young workers has increased. Today 30-32 percent of the rural

population is directly involved in agricultural production, and the role of young people has, in fact, increased. There is a fortunate convergence of the demand in quality professional work, the possibility to create the necessary conditions, and the initiative and a want for a sense of accomplishment among the youth. This is a nice profession, for it needs a fusion of biology and technology, and this leaves room for the creativity of the worker.

It is a good thing that 67 percent of the skilled workers and 11 percent of the semi-skilled workers in agriculture are below 35 years of age. The country's youngest leaders and experts are also to be found in the cooperatives and state farms. Of the 39,000 university graduates working in this branch, 48.1 percent are younger than 35 years. The new machines and machine complexes, the ever more efficient chemicals, artificial fertilizers, herbicides etc., and the new species, the technologies of animal raising that require a lot of care, all require industrial know-how and thus not only make training necessary, but also guarantee the financial basis of living. This presents tasks and a sense of accomplishment which can show to every young person where his or agriculture's future lies. This is why the agriculture is waiting for young people.

[Question] Industrial production methods are gaining ground more and more. Efficient management requires modern machines, and the higher technological level demands competent experts. Are there, in your opinion, enough highly trained people available for the agricultural industry? What will be the role of the rural youth in this technical change?

[Answer] The development of the energies and conditions of production are also unequivocal in agriculture. In the early 1970's, as a result of the initiatives of the leading agricultural enterprises, industrial technologies were developed in almost every branch of production. At present, 35 percent of our arable land produces, through industrial technology, 47 percent of our plant production.

In live-stock farming, nearly 50 percent of the production is made up by cattle, hogs and poultry farms. New technology, machines and work organization--which had never been employed in farming before--are making headway in all areas. Their operators, employers and developers are mainly young workers, experts and leaders. We train, at present, about 25,000 semi-skilled workers, 5,000 young skilled workers, about 1,100 technicians and nearly 800 engineers every year. There is, of course, a great need for young economists, architects and lawyers as well. These numbers do not include those who take part in extension training in production systems or in extension training in engineering.

I think that training and supply of professionals meet today's demand. It is very important, however, that young trained persons work in production instead of finding a "desk" job. Results achieved in production

also indicate that the training and competence of young people is a decisive factor in the success of technical change and industrial production. This is also corroborated by the outstanding results of the national competitions of production systems.

[Question] The cooperatives and farms received a considerable amount of government assistance during the years following the agriculture's socialist reorganization to improve the technical conditions of management. It seems that this protection has come to an end, government subsidy has considerably decreased, and management has also become stricter. How do these changes affect young people working in agriculture?

[Answer] The state leadership implements the realization of economic goals in agriculture--similar to other branches of the national economy--indirectly through the economic regulating system. National economic interests and the interests of the enterprises are matched through prices, subsidies, taxes and credits.

The new regulating system, which reflects the changes in both the world's and our own economy, aims at a better matching of prices with the actual economic investments and with world prices. Concern for quality and efficiency should be the result of the workers' efforts. In this sense, young people working in the agricultural field must understand that their material goals may be reached only by reaching the goals of the national economy. This means that they must assess and utilize their potentials and produce competitive quality goods economically.

This is only possible by increasing the production--through increasing the appropriate capacities, using the cost-increasing factors rationally, and keeping the quality requirements in mind--of those products which can be sold both on the domestic and foreign market. All of this does not mean a new task but demands better foresight, more initiative and more efficient work from young people as well. They are also facing increasing demands, but more efficient work has even higher rewards.

[Question] The voluntary summer student work-camps are a great help every year in the successful harvesting of farm products, especially fruit. What opportunities do you see in further broadening the cooperation between the KISZ and the agricultural enterprises?

[Answer] I would like to tell you, first of all, that the students' seasonal work--and thus the KISZ's organizational activity--will remain indispensable for agriculture. The Central Committee of the KISZ and the State Youth Committee have, for the 22nd time in 1979, recruited for the voluntary youth work-camps of the farming and food industries. Last summer 44,700 youths worked in 63 work-camps. Although the hours put in--in excess of 2,663,000 hours--do not even reach a half percent of the total hours worked in agriculture, the amount was still a great help, for its worth is 140-150 million forints.

The youth's work was closely connected with the seasonal work of the enterprises and farms. I visited numerous work-camps throughout the years, and in 1979 I saw, for example, how responsibly the young people from Budapest and Somogy fulfilled their commitments in the Kunfeherto working-camp of the Kiskunhalas state farm, and I also know that they spent the time after the working hours in a lively and cultured manner. Experience shows that the camps, in addition to useful work--for which I would like here to thank in the name of the Ministry of Agriculture and Food Administration, all young people and camp directors--served well in educating the youth in work, community life and behavior, and in making free time well-organized and useful. The executives of the enterprises were generally pleased with the work the young people have done and, according to my information, the young people had a good time, too.

According to our preliminary surveys, in 1980 we must reckon with a further increase of the farming industry's demand for labor and of the popularity of work-camps. For this reason, we are putting more emphasis, together with the Central Committee of the KISZ, on further improving the conditions at the camps. In addition, we are also concerned with the improvement of material incentives and methods of mobilization. In my opinion the relations between the farms, enterprises and the other educational institutions must be made long-term relations. We are expecting the youths this year also and are giving detailed information to any interested person until the deadline of applications.

[Question] In the weeks and months following the meetings of the youth parliaments, our editorial office received numerous letters which implied that a few cooperatives had a "strange" definition for safeguarding and representing the youth's interests. What solutions are possible for the complaints, in your opinion, without violating cooperative democracy?

[Answer] The statutory provisions regarding agricultural cooperatives have a special chapter, "Care of Members," dealing with questions that involve young people. Our legal measures have always served and are serving the special life conditions and interests of young people working in the farming industry. Except for one or two cases, the ministry is not aware of any deviation in the more than 1,300 cooperatives from the norms that are also specified by the youth law.

It is not only possible but is required in certain cases to deal with possible complaints of young people working in the agriculture, within the framework of the existing ground rules of the cooperatives but without offending the older members. It is important for representatives of the KISZ organizations to be present in the executive bodies of the cooperatives and to speak out for the youth, defending its interests.

[Question] The agricultural industry has more and more young specialists. Certain cooperatives have more than needed, others--mainly those which

operate under more adverse conditions--have less. Thus, the problem in one place is a shortage of skilled specialists, and in another place it is specialty "unemployment." What is your opinion about this?

[Answer] I have mentioned already that 50 percent, or about 20,000 people, of professionals with university degrees working in the agricultural industry are younger than 35 years. They are not distributed evenly among state farms, cooperatives and geographical regions. Enterprises with better conditions can offer better conditions for beginning careers but the possibility of material advancement is slower because of a larger staff. We are also aware of the fact that many people change jobs during the first 3 years of employment--even if to a significantly lesser degree than earlier. This is basically a healthy situation. The reason young people change jobs is not of material origin but is a striving to make a family and to work in their own specialty.

In spite of the fact that this is a healthy and balanced process, there are problems in cooperatives which function under less favorable conditions. To motivate young people to come to work here, the ministries and councils offer them bonuses and benefits in moving, building and car purchases. I think the problem is that, in addition to financial benefits and help in starting, in the future, we must give steady professional assistance as well. This requires, however, the updating of the production system and the developing of the branch. Work is more difficult in plants with unfavorable conditions and thus responsible young professionals deserve more security and moral and financial recognition. We want to help improve working conditions by doing appropriate analytical work, by concentrating assistance, by using the production systems and by stimulating rational production mergers.

The other side of the question, that of professional "unemployment," does not exist. It happens no doubt that a professional does not have a job suitable to his training. We must change this, for every young person can find a task appropriate to his training and talent. Assignments must be found and, when needed, must be requested. In order to achieve our goals, we cannot dispense with the work of even a single professional.

[Question] To stay with the topic of agrarian intelligentsia, there are more and more women graduating from universities. Still, experience shows that it is more difficult for women to fill executive positions. How can this situation be changed?

[Answer] The women's situation in agriculture is in fact more difficult because of the work and living conditions. The work of female professionals is made more difficult by several factors. In addition to the traditional homemaking, a significant part of the work in household farming is put on the shoulders of women living in villages, and they are also bound by the relative backwardness of the services and by the

rural society's social and historical traditions. The agrarian intelligentsia in rural areas is not only a group of professionals and leaders but an outstanding part of social and public life. The young female agrarian intellectual--burdened by child bearing, family care, plus further training--indeed has a difficult time attaining an executive position.

There are, of course, female executives in every field. Still, there are fields--such as that of the factory economist, chief of the gardening branch, and manager of the poultry-farm, for example--that have more or less tacitly been predominated by women. I think the change in outlook--which is also shared by our young female agrarian professionals who are displaying their leadership talent--gives more and more opportunity and calls for well-qualified leaders. And a well-qualified leader's primary attribute is not his or her sex and age but his or her professional competence and talent.

[Question] The development of agriculture has no doubt affected the changes of the villages and rural living conditions as well. Are these changes manifest in the social conditions and educational opportunities for young people? How do you see the tasks in the political and ideological education of the youth living in the country, and the role of the executives and communists of the farming industry in them?

[Answer] As I have mentioned earlier, today's rural population is not identical with the agricultural workers, and agriculture is not identical with the village. The changes in rural life have been significant, and this is motivated by the generally positive effects of the development of our entire national economy. Of course, the industrialization of socialist agriculture had a direct effect on the living conditions of young people who live and work in the country.

There is no significant difference between the wages of young and older farm workers. A great part of the work is paid by efficiency-wages and thus the earnings are in direct proportion to the amount--and more and more to the quality--of the work done. Social benefits have been greatly improved lately; a more rapid development is limited only by our material resources. We must also deal with our sociopolitical tasks in proportion to the production increases.

The social and economical changes have favorably affected the outlook, development and the way of life of young people. According to my experience, their interest in economics, politics and international questions has grown parallel with their training, and this is determined by the socialist community. I notice that a significant part of the rural youth demands regular professional and political orientation and the opportunity for education. The executives and communists of the agricultural enterprises can do a great deal to help form the future's generation by honest orientation, by involving young people in the decision making, by sharing responsibilities, and by exemplary personal conduct.

[Question] Allow me a final question. The winter recess in farming is going to end soon, spring is approaching. What are the tasks of the agrarian workers to insure a good crop in 1980?

[Answer] First, I would like to correct the question, for there is no winter recess in farming. The work is continuous, for preparations must be made for the great tasks of the year. Our plan prescribes a 4-5 percent increase of production as compared to that of 1978. The farmers did a good job in preparing for the 1980 plan. They have completed the sowing and deep ploughing. We must insure appropriate preparation in stock-raising and feeding to have continuous production of milk, meat and eggs. Machinery repair, which worked 12-16 hours a day during the autumn work, ties down significant energies. Preparations are being made now for the final accounts, and the 1980 production plan is in the making.

The plan's objectives must be related to all agrarian workers, and the tasks must be distributed to farms, brigades and individuals. This period is also suitable for expanding our professional knowledge.

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MAJOR TASKS OF POWER INDUSTRY DESCRIBED

Warsaw RADA NARODOWA GOSPODARKA ADMINISTRACJA in Polish No 22, 3 Nov 79
pp 3-6

[Article by Zbigniew Bartosiewicz, Minister of Power Industry and Atomic Energy: "Most Important Power Industry Tasks"]

[Text] Our country's power-industry situation has been complicated and difficult all this year. After the first quarter's difficulties stemming from an exceptionally severe winter, in the spring and summer months as well as in the autumn there were annoying restrictions on the supply of electric power, despite the fact that these months would appear to be a slack period for the power industry.

Realistic assessments show that both in the period which separates us from the peak of the fall-winter season and during the peak load period itself the power industry situation will continue to be difficult. For example, in September power consumption was lower than the consumption last September by about 5 percent, but the short fall was 150 percent as great.

Equalizing the Power Balance

This clear worsening of the power-industry situation, as keenly felt by the whole economy and society, occurred in our country despite the undisputed achievements of the power industry over the past 35 years, achievements expressed both in the amount of installed power in the electric power plants and in the amount of power produced annually, and despite its further systematic development.

In 1978 construction was completed at the Jaworzno electric power plant, where two 200-megawatt blocks were turned over for use, at the Rybnik plant, where three 200-megawatt power blocks were turned over for operation, and at the Kozienice power plant, where a 500-megawatt power block was signed off. A whole number of electric power and heat-generating plants which will add 463 megawatts to the power system were also completed.

Because of these investments, the attainable power of the public-utility electric power plants increased to 20,585 megawatts. In September of this year it was 1,410 megawatts higher than last September. It is from just these plants, after the necessary settling in period, the incubation, and the linking up with the power-industry system, that should give us real help in the coming fall-winter peak load period.

According to a careful assessment of this year's investment effects, most of which will go into operation, as in previous years, during November and December, the attainable electric power should reach 21,190 megawatts in the public-utility electric plants and electric-power and heat-generating plants and 2,858 megawatts in industrial electric power plants by the end of the year, or a total of more than 24,000 megawatts.

On the other hand, even if the plans for this year are carried out to expectations, the power increase still will not balance the grave imbalances overall and will not fully satisfy the ever-growing demand for power.

The disparity between the attainable and available power of the public-utility electric power plants and electric-power and heat-generating plants is presenting reaching, and sporadically even exceeds, 5,600 megawatts, or 27 percent, in the evening peak load period and 6,600 megawatts, or 32 percent of the attainable power, during the morning peak period.

Given the current power demands, during the peak hours of a working day, on a level of 17,000 megawatts in the morning and 19,000 megawatts in the evening, shortages of generated power average 2,000 megawatts. This situation must inspire us to take decisive action to bring about a maximum power balance. Such efforts are aimed largely in two basic directions:

First -- a decisive (technical, operative, and production) fight to reduce the power losses which are occurring, especially those stemming from subjective sources. The level of these losses presently exceeds 16 percent of the total attainable power.

Second -- savings efforts, conceived in the broadest possible terms.

The power ministry, in cooperation with the Chief Inspectorate of the Power Economy, has prepared a project for a modernized group of undertakings to bring about a balance in electric power, but we should not expect it to resolve the country's power problems. For power-industry districts, electric power plants, and all the power support network, the most important issue is the program presently being formulated which can provide the most rapid possible effects in the expansion of available power and the reduction of losses.

Improvement of the System of Administration

In order to increase as necessary the peak power output and improve as rapidly as possible the working reliability of the power-industry system,

we must mainly take into account too the need to control the excessive break-down rate for industrial and processing equipment, an accomplishment which would produce noticeable improvement in the country's power situation, and we must also provide for essential, decisive improvement in the repair system and for improvement in the quality of repairs.

Targets for this year include the following:

Overhaul 572 basic items of production equipment in electric power plants and electric power and heat generating plants totalling 18,616 megawatts of power, which represents about 89 percent of the installed power of the public utility power plants,

Perform repairs on 17,000 kilometers of electric line,

Modernization of equipment provided for within the framework of the repairs campaign including 90 projects in 36 electric-power plants.

On the other hand, an analysis of the course of the repairs campaign in the electric-power plants and electric power and heat generating plants shows substantial delays in repairs, which have created grave tensions in the national balance of energy during the last quarter of this year.

Repairs to electric transmission lines are coming to a close, but, as happens every year, during the final quarter of this year there remains a wide range of repairs to the distribution network which powers agriculture and farm livestock installations.

The quality of the repairs also creates reservations in our minds, because many power blocks suffer frequent breakdowns right after the repairs are completed.

Installed Power of the Electric Power Plants in Thousands of Megawatts

<u>ZAINSTALOWANA MOC</u> <u>ELEKTROWNI w tys MW</u>		
<u>1970 r</u>	<u>1978 r</u>	<u>1985 r</u>
13,8	23,8	37,0

From the course of this year's repair campaign we will draw conclusions for the future, in order to prepare each block better for repairs in terms of the completeness of supply and full readiness on the part of the performing potential, as well as conscientious acceptance of all repaired equipment being returned for use. The ultimate effects of

the repairs are being used absolutely as the most important criterion in assessing repair work. This idea should be aided by the newly-created system for monitoring the completeness of the preparation of technological and organizational documentation and of deliveries and contracting potential for the repair and overhaul of each block, 3 months prior to the designated date they are to begin.

In the future repairs will be focused first of all on those power-industry block components which are the worst in terms of wear and availability. At the same time we will strive to increase domestic supplies of spare parts, to expand the contracting potential, to develop ministry bases of production and repair facilities and support, and so on, and especially to increase the domestically-produced and foreign repair equipment and specialized assistance (which determines the productivity of the work and its quality) for repair teams.

An important factor in power losses is the breakdown rate of electric machinery and equipment (generators, transformers, switchgear, secondary circuits) for steering and control. These breakdowns are to a large extent the result of the absence of required preventive measures, the lack of a systematic approach to reviews and preventive action, and operational errors which occur too often. Therefore, great possibilities for reducing the breakdown rate and operational losses of power are to be found in training operational workers, their conscientiousness in operating the machinery and equipment, and rigorous adherence to the regulations for operation of machinery and equipment, and we expect this of all power engineers.

The scope of repairs increases along with the rise in installed power in the power industry and also along with the continuing process of the ageing of the equipment.

For this reason the ministry will make great effort to simplify this work by inculcating what are called industrialized repair methods.

Unless repairs are industrialized, we cannot be comfortable in looking at the future of the power industry, and this is also why broad cooperation has been undertaken in the production of spare parts, the rebuilding of damaged components, and, in areas where there are special shortages, we have undertaken to expand additional production capacity, a project which will be furthered by making the production and construction potential which works mainly on behalf of the power industry subordinate to the Ministry of Power and Atomic Energy.

Deliveries of Coal and Its Quality

The current activity of the power industry and the forecast of the situation for the fall-winter peak load period are influenced and will be influenced by the extent to which we are supplied with an adequate amount of

fuel of appropriate quality. In our country this fuel is coal. We must all realize that Poland is also an exporter of coal. Therefore, owing to the demands of the foreign market and the economics of distant transportation, we can only export coal of adequate quality and parameters strictly specified in contracts. We ourselves, as an exporting country, must burn coals of lesser grades, adapting to this need the current and future development of the power industry.

In the current situation, our top task is work for the best possible deliveries of coal, under the conditions of the domestic market, for the on-going production of the electric plants and the electric-power and heat generating plants and for the creation of reserves for the winter.

The power-industry ministry will continue to enter into closer cooperation with the mining ministry, focusing attention mainly on the need for absolute improvement in the quality of coal for the electric power plants which are of fundamental significance for the electric-power system. There is agreement on the updating of methods for controlling coal quality through the creation of a power-industry ministry coal quality control service. We are negotiating on a change in the text of the agreement between the power-industry and mining ministries, in the direction of a permanent guarantee of proper deliveries of coal for the public utility power industry, taking into account the construction design of the electric plants which have already been built.

Taking into account the fact that a long period of time is required, by the nature of things, for the power industry's adaptation to burn lower-grade coal, we will work to see that the electric power plants and the electric and heat-generating plants which are to be built will be able to handle the lower grades of coal (in terms of technical capabilities). We will join the ministry's technical support more effectively in the development of this strategic problem.

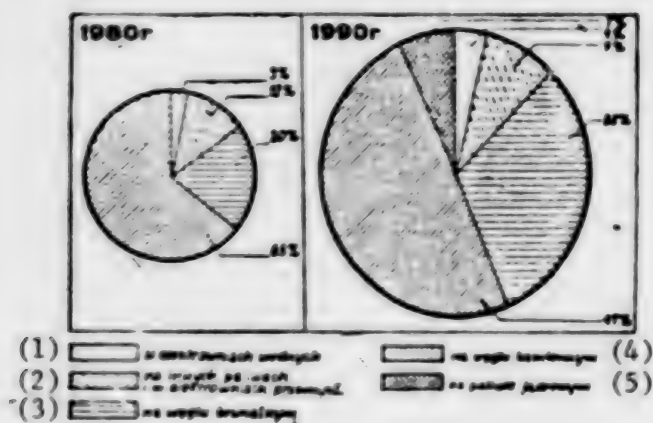
Separate undertakings will concern the adaptation of the design of the Jaworzno III electric plant to burn coal which has a high sulfur content. Consideration is also being given to the possibility of building a new electric plant near Silesia, one designed ahead of time to use coal of poorer quality.

The fulfillment of the annual extraction targets set in the plan for brown coal, which is so important for the power industry, and the removal of cap-rock are endangered.

An especially difficult situation has prevailed for a long time at the Konin mine.

Applicable, ad hoc actions have been taken to improve the existing situation, but they will require that the railroads give priority to Konin mine transport tasks.

Structure of Electric Power Production



[Key]

- | | |
|---|----------------------------------|
| (1) in hydroelectric plants | (3) in plants using brown coal |
| (2) in plants using other fuels and in industrial electric plants | (4) in plants using hard coal |
| | (5) in plants using nuclear fuel |

The mobilization of a heating-plant system from public utility power sources in a number of the major urban and industrial centers is an important task for the coming period.

Execution of the Investment Plan

The situation in executing this year's investment tasks is difficult and tense. Delays have occurred in both the construction of electric power plants and electric power and heat-generating plants, and in the utilization of electric power stations and lines.

The following are among the major causes of the existing delays:

Slowdown in execution of investments during the first quarter of this year,

Inadequate construction-installation capacity of enterprises carrying out tasks for the power industry,

Delays in deliveries of components, machinery, and equipment, as well as building materials and structural elements,

Transport difficulties, particularly in carrying bulk materials.

The program for the expansion of the electric power system will be carried out. This program is basically connected to the transmission of

power from the electric power plants to the system and the build-up of housing construction.

As the result of the above-mentioned difficulties with meeting deadlines on the building sites for reaching the effects planned for this year, there have also been delays in carrying out the tasks planned to be completed in 1980.

In order to create conditions for the maximum fulfillment of this year's plan, the ministry has undertaken efforts in three basic directions:

1. To see that lacking materials and equipment are supplied either from domestic industry or else from imports during the third quarter,
2. To expand the construction and installation capacity,
3. To integrate organizational execution of construction and installation projects and basic deliveries of equipment into the ministry's investment activity.

The basic targets for 1980 include, among other things, the construction of the following electric power plants:

Polaniec, in which the plan is to put four 220-megawatt blocks into operation and also to complete the installation of block No 3, which unfortunately will not be signed over for use this year,

Zarnowiec, where, despite the delays which have cropped up, actions have been taken to sign three 170-megawatt hydroturbine units over for use,

Belchatow, in which the draft of the 1980 plan provides for mobilization, already threatened, of the first 360-megawatt block around the end of the year and where it will be necessary to focus efforts on insuring deliveries of boilers and auxiliary equipment and the completion of much construction and installation work,

Opole, for which the plan draft calls for more than tripling the outlays for construction and installation, which will make it possible to obtain the first 360 megawatts of power in 1982.

In addition, the scope of work on electric plant building sites to be signed over for use in years to come will be expanded.

In the construction of the electric power networks, work will be stepped up on delayed tasks which are a condition to linking up the whole system, on transmission lines, and on a wider range of distribution lines related to improving the reliability of power and reducing network losses.

In the brown coal industry investment activity will be concentrated on the construction of the Belchatow mine, in order to obtain the first extraction in 1980 and to insure further extraction adapted to electric power plants and the outcrop at Lubstow in the Konin mine (in order to reach the first coal). In addition there are plans to begin construction on the Szczercow outcrop in the Belchatow mine and to continue modernization of the plants related to the brown coal industry.

In the heating plant system, the plan for 1980 calls for steeping up the continuing projects and beginning new investments, especially in Warsaw and Silesia, in keeping with the provisions of the PZPR Central Committee Politburo.

In nuclear physics, in keeping with Council of Ministers Resolution No 82/89 investments related to the mobilization and development of production of Hindukusz and Sejwal equipment for nuclear power plants will be carried out.

The following increases are anticipated overall in the draft of the plan for 1980:

- electric power -- 1,780 megawatts
- thermal power -- 1,190 gigacalories!/hour
- power in distribution stations -- 4,389 MVA
- electric lines -- 3,410 kilometers
- brown coal extraction -- 500,000 tons/year in the Belchatow Brown Coal Center

Work on the development of the various sectors of the ministry is being adapted to the requirements of the National Socioeconomic Plan for 1981-1985, and the program work, to 1990 and beyond, 10 years ahead.

From the analyses and work done we can see that the following basic investment effects need to be obtained in the 1981-1985 five-year period:

Increase of at least 10,500-11,000 megawatts in the electric power in public utility electric power plants and electric-power and heat-generating plants,

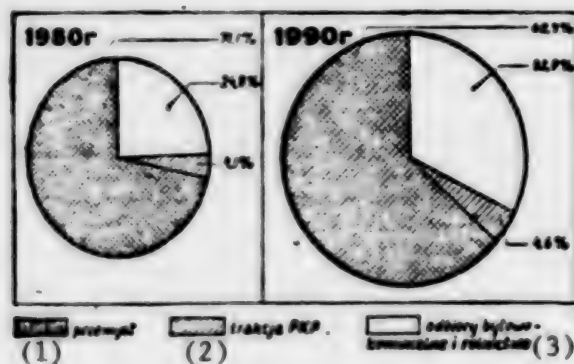
Increase of 11,500 gigacalories per hours in thermal power,

Increase of 40 million tons in the extraction of brown coal,

Development of an electric power network with a total length of 45,000 kilometers,

and 35,000 MVA of distribution station power.

Structure of Electric Power Consumption



[Key]

- (1) industry
- (2) traction of Polish State Railroads
- (3) residential-municipal consumers and agriculture

Better Utilization of Facilities

We are attaching a great deal of significance to the operations of the planning offices, and the Energoprojekt Main Office of Energy Studies and Projects and Poltegor Central Strip-Mining Research and Design Center, both because of the important role which the general designer plays in the investment process and because of the broad current needs in the area of investment documentation and the developmental needs of the electric power industry, heating plant system, brown coal industry, and nuclear physics.

The current potential of the ministry planning organizations (3,940 employees and 706.5 million zlotys' worth of sold production in 1979) represents great resources in carrying out production tasks.

In the light of the ministry's developmental tasks to the year 1990 and the lead time which the design organizations should have in which to operate, it is also essential to consider monitoring the design organizational forms to bolster the links with the organizational forms of the General Supplier of Equipment and General Contractor of the construction and installation.

We have great scientific research potential, particularly in the area of power industry and nuclear physics. We have a large number of scientists, including many famous ones who are enriching Polish science and world science with work of a basic nature. Their knowledge and contribution must be fully utilized for the development of the Polish nuclear power industry and the domestic industry which builds apparatus, machinery, and equipment for the power industry.

Improving the System of Administration

The aid granted to the power-industry ministry, as specified in the provisions of Council of Minister Resolution No 127, has also made it possible to regulate certain matters in the system of power-industry wages, which should make it easier to recruit personnel for this branch of the economy, to encourage people to work in shifts, and to help stabilize the work force. We will try to insure that all units of the power industry carry out properly the provisions of the above-mentioned resolution.

We are introducing a new element into our personnel and wage policy: special bonuses related to concrete, measurable effects of work. The chief effect for which these bonuses will be awarded are the following: the attainment of additional available electric plant power which can be specified appropriately in time periods and precisely measured and monitored, the extraction and preparation of brown coal, the removal of overburden, timely completion, and adherence to quality criteria in repairs. Approval for the use of this fund will be given by the minister, and if the proper effects are not achieved, the fund may not be exhausted.

A detailed analysis will be made of the organization of work and of labor productivity in all ministry units, because we still see a lot of untapped reserves.

Thrifty Use of Power

Under the current conditions of the country's fuel and power industry, energy savings in all forms should have top priority. Rationalization of electric and thermal power consumption should take priority in the work establishments, municipal economy, and dwellings.

We are aware of the negative social and economic effects of drastic black-and brown-outs caused by a genuine power shortage, and we will consider it one of the key goals to minimize the frequency and length of them, but we must take effective and, if need be, drastic remedies to deal with proven waste and extravagant and sometimes careless electric and thermal power consumption by both industrial consumers and private ones. In co-operation with the Main Institute of Mining an appropriate program of joint action with other economic ministries will also be undertaken to reduce the rate of electric and thermal power consumption per unit production. In relation to the construction ministry, this program will aim for effective improvement in thermal insulation in the housing and industrial construction put up.

Preparations for This Winter

The power industry is facing an especially difficult fall-winter work period. We have used the name "Action Frost" to cover the preparations for

Diagram of Comprehensive Fuel and Energy Balance-Sheet of the Country in 1978 (in thousands of tons of standard fuel)

(a) Źródła energii /ogółem 207 767/ krajowa 176 497					(b) Import 3 270		(z)
V 1217	2/ 1517	Kopa naftowa (c) 25553	3/ 11064	(d) Węgiel kamienny 154782			
(e) Przetwarzanie pierwotnych nośników energii /refinerie, koksownie, gazownie, elektrownie, ciepłownie, wydzielnie, czyszczalnie i inne/							
(f) Źródła energii użytkowej /finalnej/ 174 022						Straty konwersji i produkty niepalne	
Energia elektryczna (g) 13618	Ciepło w parze i gorącej wodzie (h) 30 255	Paliwa gazowe (i) 19 539	Produkty naftowe /paleniskowe/ (j) 16 645	Koks (k) 16 039	Węgiel kamienny (l) 70 355	36 145 (m)	
(n) Zużycie krajowe końcowe 125 290						Ekspert (q) 43 262	
Energia elektryczna (o) 12 243	Ciepło w parze i gorącej wodzie (h) 29 762	Paliwa gazowe (i) 18 640	Produkty naftowe (p) 15 993	Koks (k) 15 245	Węgiel kam. (l) 33 812	Na zapasy (x) 310	
(r) Zużycie w g. dz. gospodarki nar. 125 290						Straty przesyłu (y) 1560	
(s) Przemysł 64 660			(u) Cele bytowo-komunalne 44 361			June (z) 1595	
(t) Budownictwo uspoł. 1668			(v) Transport 3349				
			(w) Rollnictwo uspoł. 3349				

OJASNIENIA.

1/- nośniki gazowe /produkty naftowe z importu, en. elektryczna, wodna itp/

2/- gaz ziemny

3/- węgiel brunatny

4/- smoły, benzol z węgla, asfaltu i smary iropy

OBJASNIENIA

- 1/- nośniki gase /produkty naftowe z importu, on elektryczna, wodna itp/
- 2/- gaz ziemny
- 3/- węgiel brunatny
- 4/- smoły, benzol i węgiel, asfalty i smary i ropę

[Key]

- | | |
|---|---|
| (a) Primary sources of power (total 207,767) domestic 176,497 | (r) Consumption by sector of the national economy |
| (b) Imports | (s) Industry |
| (c) Crude oil | (t) Socialized construction |
| (d) Hard coal | (u) Residential-municipal purposes |
| (e) Processing of primary sources of power (refineries, coking plants, gas plants, electric power plants, heat-generating plants, low-temperature carbonization plants, gas generators, and others) | (v) Transportation |
| (f) Utility (final) power sources | (w) Socialized agriculture |
| (g) Electric power (gross) | (x) For reserves |
| (h) Heat in steam and hot water | (y) Transmission losses |
| (i) Gas fuels | (z) Other |
| (j) Petroleum products (fuel) | |
| (k) Coke | |
| (l) Hard coal | |
| (m) Conversion losses and nonfuel products | |
| (n) End domestic consumption | |
| (o) Electric power | |
| (p) Petroleum products | |
| (q) Exports | |

[For Explanation (AA), see next page]

[Diagram key, continued]

(AA) Explanation

- 1/ -- Ready sources (imported petroleum products; electric power, hydro-power, and so on)
- 2/ -- Natural gas
- 3/ -- Brown coal
- 4/ -- Tars, benzol from coal, asphalts, and greases from petroleum

this winter. In all the electric power plants, electric-power and heat-generating plants, and power system establishments, plans have been drawn up for operation during the period of heavy frost and great snowfall. These plans take into account the existing and projected supplies of materials and fuels, carbonization and ash removal installations; on the other hand, in particular they define the critical sections which create special dangers and present strategies for handling them.

All factory, auxiliary, and social buildings should be protected against cold and have weather-stripping and the like installed.

Special teams should be created in plants and at the level of the districts and the Industrial Association of the Brown Coal Industry and Electric Power Plants, and their tasks should be defined for critical periods.

We must prepare protective clothing and equipment, warm garments, and a system for supplying nutritious food to people working out in the open.

We also foresee the organization of a domestic emergency squad to respond with the necessary employees in the case of a breakdown and the development of systems for calling them and bringing them to work.

In order to avoid counting only on their own resources in critical situations, the directors' offices of the plants have been required to make contact with local officials, neighboring industrial plants, construction enterprises, and army units. The purpose is to obtain the assurance of emergency assistance. We are trying to enter into suitable agreements regarding the unloading and internal transport of coal, snow and ice removal, the elimination of chance breakdown damage to equipment, help in essential clean-up, and so on.

"Action Frost" groups will be set up in staff plants to see that the plan for winter peak load period preparations is carried out, and a system will be established for training and mobilizing workers in the event critical winter conditions occur.

One feature of critical weather conditions is that they sometimes come in series. It is up to all of us, especially power engineers, to see that last year's critical breakdown in the working of the domestic power system during those well-remembered days at the beginning of January and in the second 10 days of last July is not repeated. It is for this reason that we are undertaking with great seriousness and responsibility at every level of energy management the necessary efforts in preparation.

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JOINT DEVELOPMENT OF POWER INDUSTRY, ECONOMY OUTLINED

Warsaw RADA NARODOWA GOSPODARKA ADMINISTRACJA in Polish No 22, 3 Nov 79
pp 8-10

[Article by Docent Dr Inzynier Lechoslaw Gruszczynski, First Deputy Minister of Energy and Atomic Power: "The Power Industry and Other Areas of the National Economy"]

[Text] The development of the fuel and power industry is closely related to the country's socioeconomic development. This is why any disturbances in the power economy are clearly reflected in areas of operation of every sector of the national economy: industry, construction, transportation, and agriculture, and they also cause specific effects in the residential-municipal sector.

There are interrelationships between the results of the country's economic activity defined in terms of the size of generated national income and the amount of fuel and power consumed for that purpose.

The ratio of the amount of primary fuel (coal, natural gas and crude oil) used for generated national income is expressed by the energy intensiveness of national income in tons of standard fuel (tpu) per million zlotys of income (tpu/million zlotys in constant prices).

In 1970-1974 the energy intensiveness of national income declined by about 5-6 percent per year on the average (from 151 tpu per million zlotys in 1970 to 121 tpu per million zlotys in 1974). On the other hand, since 1975 the rate of decline in the energy intensiveness of the national income suddenly slowed, and it has practically remained at the same level.

Factors bringing this about were, on the one hand, the mobilization in recent years of new energy-intensive plants (Katowice steel mill, cement plants, and so on), which reach full productivity after a substantial period of time, and also to a great extent the restrictions on and interruptions in fuel and power deliveries, and the decline in the quality of coal.

At the same time great development took place in housing and industrial construction which had far inferior insulation properties in terms of the partitions. This fact was responsible for an increase in the fuel used for heating. There was also the development of large-commodity farms and livestock facilities requiring larger amounts of fuel and power for the introduction of industrialized production methods.

Energy Intensiveness of National Income

The overall level of the consumption of primary power in Poland is relatively high, with shortages felt.

1. The basic cause is the very structure of the country's fuel and energy balance, which features a high proportion of solid fuels: hard and brown coal. Efficiency in processing them to turn them into derivative forms of energy (electric and thermal power) is far lower than the efficiency in burning hydrocarbon fuels (gas and crude oil), a factor which has a great influence on the level of the effectiveness of using fuels and power and therefore on the level of energy intensiveness of the national economy.

The structure of the fuel and energy balance-sheet also has an important influence on the level of effectiveness of fuel utilization in the residential-municipal sector in the towns and in rural areas, as well as in agriculture and transportation. The efficiency of the equipment used, for example for heating for livestock and farm production purposes or steam traction, in which coal is the fuel, is far below that of equipment in which hydrocarbon fuels are used as energy sources.

2. The next major reason for the high level of energy intensiveness of our country's national income is the large proportion of energy-intensive branches of industry (mining, ferrous and nonferrous metallurgy, chemical industry, building materials industry). There will be a decline in energy intensiveness as improvements are made in power management in these industries and as changes are made in the structure of production, but it should be emphasized that despite a substantial rise in the technical level of our industry, we still have quite a few older plants with antiquated technology and equipment, as can be shown by the great disparity in the energy intensiveness of the production of the same items in various plants.

3. The level and structure of fuel and energy consumption in agriculture are unsatisfactory, partly because of the excessive share of solid fuels used in the unprocessed state and the low degree of mechanization and electrification of private farms and households. The energy and electric-power intensiveness of agriculture, especially socialized agriculture, is showing a rising trend, as the result of the ever greater introduction of industrialized large-commodity livestock and crop production methods, which require the use of many new energy intensive items of equipment, mechanization, and so on.

4. There is a general rise in the energy intensiveness of construction, partly as the result of the development of industrialized construction methods (house factories) and mechanization of labor.

The buildings' thermal losses caused by the use of materials with a low insulation rating and also by faults in the construction play a very great part in the high level of fuel and power consumption.

As the result of the use of large-slab materials in construction, given the average quality of insulating materials, this index has risen to its present level of about 20 kilocalories per cubic meter per hour. Hence, this has produced the effect of increasing thermal losses in construction by 25-33 percent, and as a consequence has meant a rise in fuel consumption per heating during one heating season from about 11 kilograms of real coal per cubic meter of space in the building to about 14 kilograms (from about 8.5 kilograms of standard fuel to about 11 kilograms).

With a similar large-slab construction system, the thermal demand indices in both socialist countries and in countries of Western and Northern Europe and the United States (reduced to Polish climatic conditions) not only did not increase in relation to the initial 15-16 kilocalories per cubic meter per hour but even declined to 12-14 kilocalories after ad hoc measures inspired by the world fuel and energy crisis were taken.

The significance of the problem is heavily underscored by the fact that even the current rise in the thermal demand index from 16 kilocalories per cubic meter per hour to 20 kilocalories is causing an increase in fuel consumption per apartment in one heating season (gross calculation including corridors, stairways, and so on) of up to about 0.6 tons of real coal.

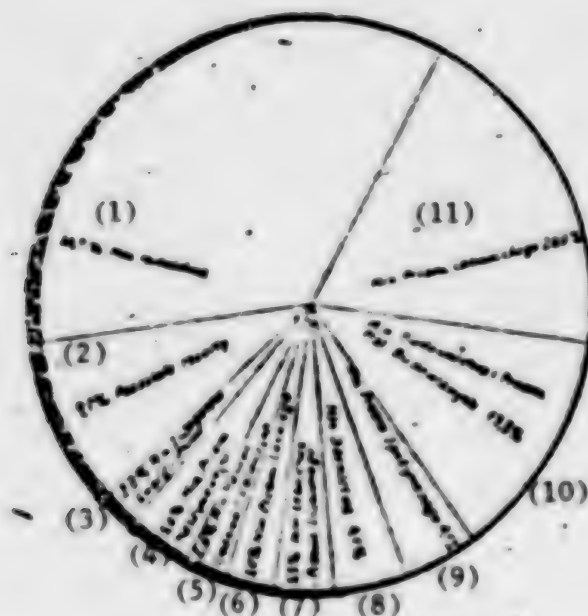
Hence, the result of this, given the completion of tall buildings called for in the 1976-1980 5-year program, is an increase of about 700,000 tons in the consumption of coal, which corresponds to a value of about 490 million zlotys per year, including the costs of procurement and transport.

The commitment of funds which can be saved by eliminating fuel waste in buildings to the improvement of the quality of building materials presently being used should be the basic direction of action for the building materials industry.

Everyday Instances of Waste

At the same time, alongside ever increasingly severe difficulties in the energy economy, we see in the economy many instances of absolutely criminal waste of fuel and energy, waste stemming both from the faulty organization of production processes, from failure to appreciate the seriousness of the problem, and from ordinary absence of habits of thrift. More or less grave failures and shortcomings requiring consistent counter-measures are found in all areas of fuel and power utilization.

Fuel and Power Consumption in Industry in 1978 -- by Ministry



[Key]

- | | |
|---|--|
| 1. Ministry of Metallurgy | 6. Ministry of Light Industry |
| 2. Other Ministries | 7. Ministry of Forestry and Timber Industry |
| 3. Ministry of Power Industry and Atomic Energy | 8. Ministry of Mining Industry |
| 4. Ministry of Machine Engineering Industry | 9. Ministry of Food Industry |
| 5. Ministry of Heavy and Agriculture Machine Industry | 10. Ministry of Construction and Building Materials Industry |
| | 11. Ministry of Chemical Industry |

In many plants we see the irrational use of fuel and power, machinery and equipment running for nothing and being shut down when a new shift comes onto the floor, only partial utilization of the capacity of furnaces for heating, work where the machinery is not at full capacity, as well as the failure to adhere to technological regimes, the time for grinding materials and raw materials and heating the charge in boilers, and so on, factors which cause fuel and energy to be wasted. The absence of or improper use of water treatment installations, improper conservation of measurement and control apparatus and automatic equipment, gates which are always open and production hall windows which have been broken because of the faulty functioning of ventilation and climate control systems,

poorly sealed pipe systems, bad condition of insulation, and the improper regulation of thermal systems are only a few examples of the shortcomings which occur in many factories.

A great source of the losses is the tremendous heating and lighting of the large halls instead of only the places where the employees are and the equipment is in use, the excessive ventilation of entire halls instead of the use of local blowers or the sealing and isolation of equipment and the designation of localities and rooms for equipment which emits pollution, and so on. Improvement of production quality and reduction of the number of rejects, the reduction of cutting tool machining allowances, and so on also represent a limitation on the nonproductive consumption of fuel and power also. There are many possibilities for reducing fuel and energy consumption too in commercial and service establishments, and public-use buildings and offices.

Such possibilities also occur in the housing economy, where windows and doors which do not shut tightly, automatic doors which are out of order, unnecessary lights which are not shut off, automatic lighting which is out of order, improper regulation of heating installations, hot water leaking through openings for ventilation in central heating installations, and so on cause needless fuel and power consumption.

Another problem is the maintenance of machinery, equipment, and apparatus in proper technical condition and the conducting of rational maintenance and repairs, because as they become worn their efficiency declines and power losses increase.

Basic Tasks of the Chief Inspectorate of Power Management

The basic direction of the operations of the Chief Inspectorate of Power Management is to reduce the national economy's energy intensiveness both through the elimination of all manifestations of power and fuel waste and through the modernization of power-industry equipment in use, along with the gradual introduction of new energy-saving technological processes, in particular.

Among its basic tasks are the following:

Monitoring adherence to regulations and principles in effect in the area of rational, thrifty fuel and power management,

Approving the use or sale of power-industry equipment which is sufficiently efficiency,

Approving investment projects and modernization projects in the realm of the fuel and power economy, especially from the viewpoint of the consistency of the technical and technological designs with the regulations and principles of rational fuel and power management,

Initiating and conducting analyses, research and development, and measuring and expert critique in the area of fuel and energy management,

Cooperating in the preparation of fuel and energy balance-sheets and giving opinions on programs for the development of various sectors of the national economy in terms of the extent to which they follow the principles of rational fuel and energy management,

Monitoring qualifications required for people employed in the design, construction, and use of power-industry equipment, owing to the need to provide for the rational management of fuel and energy.

The Chief Inspectorate of Power Management is carrying out its tasks, for example, by running checks on fuel and energy management and by issuing appropriate recommendations, by approaching ministers and voivodship leaders with requests concerning the application of remedies aimed at the rational use of fuel and energy, by broadly popularizing rational fuel and energy use, and by initiating the organization of counselling in this sphere.

Directions for Reducing Energy Intensiveness

One of the most important factors determining even today the level of the national economy's energy intensiveness in the immediate future is the modernity and energy-saving features of design solutions and the quality of the contracting, which will influence the level of fuel and power consumption through the entire long period of operation of the installations, machinery, apparatus, dwellings, and so on.

On average, during the course of the year, the Chief Inspectorate of Power Management, or GIGE, reviews about 6,000 design documents, including about 30 complicated investment projects. It is estimated that the changes made in 1978 alone in the designs approved from the viewpoint of fuel and power consumption will save about 800,000 tons of standard fuel and about 2.8 billion zlotys in investment outlays.

As everyone knows, the centralization of the heat supply and the introduction of consolidated thermal and electric power production provide great savings. From this point of view too there has been monitoring of the program for the development of the heating plant system realized by the power and atomic energy ministry.

The next direction of efforts which is still important is the constant expansion of modernization of fuel and power management in existing installations. Under current conditions, given the pressures in the fuel and energy balance and the need to incur ever greater investment outlays to increase coal extraction, for a reduction in the consumption of fuel, energy, and electric power in the national economy, modernization is the way and a task of primary importance. In addition it provides the possibility

of obtaining the most rapid effects in this area at a fraction of the outlays and sometimes at even a very small percentage of them.

And thus the modernization undertakings being carried out within the framework of GIGE's program for the effective use of fuel and power for 1976-1980 will produce fuel and energy consumption savings on the order of a million tons of standard fuel per year, and the outlays represent only a few or few dozen zlotys per ton of standard fuel, rarely exceeding 1,000 zlotys per ton of standard fuel. The expansion of the scope of the modernization undertakings and giving them proper priority would make it possible in a short time to obtain fuel and energy savings on the order of 2-3 million tons of standard fuel per year, and the investment outlays for this will not be great. Unfortunately, modernization projects for fuel and energy management are still being treated in the enterprises as a problem of secondary importance, and investment funds are allocated mainly for modernization projects which provide for increased production capacity.

This year about 2,000 modernization undertakings will be given special analysis, because the influence of modernization on the rationalization of fuel and energy management can and should be far greater than it has been in the past. This is an important assumption of the modernization projects program presently being prepared for the next five-year period.

Independent of the multidirectional ad hoc efforts on behalf of the rationalization of fuel and energy consumption being developed in all units of the socialized economy, it is essential to carry out long-range undertakings aimed at reducing our economy's energy intensiveness.

The very broad scope of issues related to the rationalization of fuel and energy management, the mutual relationships with the development of the national economy, and external conditions require the comprehensive conceptualization of this whole complicated problem and multidirectional analyses. Work in this area has been undertaken within the framework of the government group to draft a program for the development of the fuel and energy economy to the year 1985 and directions to the year 2000, and within the framework of the government research program being prepared in this area. Many specialists representing various disciplines are working in the preparation of these problems.

Thrifty a Goal and Command

Last winter's experience has caused problems related to the rationalization of the fuel and energy economy to be given greater attention. Various means of action have been undertaken to ease the tensions which have occurred in the energy balance-sheet.

It was necessary to introduce severe limitations on the consumption of all types of power and electric energy. Plans to restrict the consumption of electric power and gas fuels were adopted, and a flexible system of infor-

mation concerning the level of restrictions and the scheme of rotation of plants in which the restrictions are to be applied was introduced.

In each voivodship plenipotentiaries were appointed at the rank of deputy voivodship head on energy and fuel savings. Voivodship and plant socio-economic commissions were also appointed with the task, for example, of monitoring the execution of resolutions and directives issued concerning fuel and energy management and programs drafted on that subject.

Consumers' adherence to the fuel and energy consumption limits set for them and limitations imposed on them will be monitored more closely.

Nevertheless we still find that rational management of fuel and energy in many economic units is still not being treated on a par with production problems or problems which have a share in determining the execution of production and economic tasks. In many plants production and the implementation of technical-economic plans are still being conceptualized as quite separate from fuel and energy problems, despite the fact that the influence which restrictions in fuel and energy deliveries have on the plants' production effects has become obvious. Suffice it to mention that fines levied for exceeding fuel and energy consumption limits in 1978 amounted to several billion zlotys.

The understanding of these problems is still worse in a large number of small factories and service plants, commercial outlets, and so on, where they are often not only not faced with efforts undertaken to rationalize fuel and energy management but flaunted through obvious waste of fuel and energy.

Intensive control efforts conducted by GIGE bodies show the lack of the proper supervision on the part of supervisory units in many plants. The directives issued sometimes take several months to reach subordinate units, and in many cases their implementation receives only formal treatment. This is undoubtedly tied in to a great extent to the personnel and level of the energy services and their role and priority in the individual economic units.

Control and analysis which GIGE conducted in 1978 showed that in only about 50 percent of the factories did an energy service exist. The situation in this sphere is still worse outside of industry. In many units and plants fuel and energy management issues are handled by other services (investment, traffic maintenance, and like services), and even ad hoc by incidental employees of various sections, including administration. In superior units too there has been a decline in the staffing and rank of the energy services, which fact has helped weaken the monitoring of subordinate units in terms of conducting rational fuel and energy management.

The control monitoring which GIGE conducted on about 20,000 units in the past period shows that there are still great untapped energy reserves

which can be made available through simple actions, often actions which do not require any investment outlays but will produce nearly immediate effects. The numerous instances of failure to adhere to the principles and regulations of rational energy management, as detected in the course of this monitoring, especially in small plants and units, show the need to bolster or set up energy services and to expand supervision in this area on the part of supervisory units.

Concrete conclusions for further action to rationalize fuel and energy consumption and for the work of all the units interested in this are supplied by this year's comprehensive fuel and energy management monitoring in seven energy intensive industries: cement, founding, refractory materials, inorganic materials, petrochemicals, building materials, and man-made fibers, and control problems concerning 14 particularly important sectors of the fuel and energy economy. They should also be reflected in bringing up to date the plant programs for saving fuel and energy, programs which are an important task this year.

[Remarks] A. If a 60-watt light globe was turned off at the same time in every household, the power in the system would decline by 400 megawatts.

B. If all the television subscribers turned on their sets at the same time, the power consumed by customers would increase by nearly 1,000 megawatts.

In the rationalization of power management, particularly grave tasks face the voivodship energy and fuel savings plenipotentiaries and the socio-economic commissions and worker self-government conferences. The review made this year of the fuel and energy economy in all units of the socialized economy should serve as the basis for the undertaking of tasks and programs of action to bring about substantial improvement in fuel and energy management.

It should be the task of the voivodship plenipotentiaries to work in co-operation with party echelons to systematically supervise the execution of these tasks and programs and to bring in the widest range of socio-economic activists to work on these projects, giving particular attention to the coming fall-winter peak period, which will be difficult for the power industry and the whole economy.

CURRENT ENERGY PROBLEMS DISCUSSED

Warsaw RADA NARODOWA GOSPODARKA ADMINISTRACJA in Polish No 22, 3 Nov 79
pp 14-20

[Roundtable Discussion with Docent Dr Engineer Lechoslaw Gruszczynski, First Deputy Minister of Power Industry and Atomic Energy; Magister Engineer Jerzy Wojtowiecki, Vice Minister of Power Industry and Atomic Energy; Magister Engineer Andrzej Wyrzykowski, Vice Minister of Power Industry and Atomic Energy; Chief Inspector of Power Economy Magister Engineer Jerzy Wojcicki; Magister Wanda Jaworska-Gromczynska, director of the Legal-Organization Department of the Ministry of Power Industry and Atomic Energy; Magister Engineer Zbigniew Pakula, director of the Energoprojekt Main Office of Power-Industry Studies; Magister Engineer Wladyslaw Sikora, deputy director of the Department of Atomic Energy of the Ministry of Power Industry and Atomic Energy; Engineer Marcin Tyminski, vice chairman of the Main Administration of Power Engineers' Trade Union; Magister Engineer Teodor Czeczenikow, deputy director on technical matters of the Energoprom Production and Repairs Enterprise for Power Industry; with Editor-in-Chief Prof Dr habilitowany Wincenty Kawalec and editorial office secretary Antonina Lezensk representing the editors: "The Ministry Leadership at the Editors' Table to Discuss Current Problems of the Power Industry"]

[Text] The Power Industry's Base and Its Condition

[Question] Why, despite the constant flow of information on the development of the Polish Power industry and the systematic rise in new power, is the power shut off so often? This year this even happened during the summer, that is, during a period which is after all a good one for the power industry. What are the reasons for this?

[First Deputy Minister Lechoslaw Gruszczynski]: There are at least several reasons for this situation.

One of them is the very imprecision in calculating peak power output in the Polish power industry system. If we just use figures, in 1979 we have in Poland installed power somewhat over 24,000 megawatts. If in December, January, and February, that is, the period which is the most difficult for

power industry, we managed in continual work to produce about 21,000 megawatts of the 24,000 megawatts (that is the estimated national demand for this period), then we would not have to apply any restrictions or shut off the power.

The only thing is that there is the question of whether we really have 24,000 megawatts available in our system. After all, this figure expresses the statistical installed power, that is, the total of the power from the tables of the nominal generators according to their producers. Meanwhile, the real (attainable) power is that which the electric power plant can produce on a continuing basis, that is, 15 hours per day.

There is a difference of nearly 500 megawatts between the attainable power and the installed power of the system (including the public-utility and industrial power plants). In addition, in the Polish system, more than 1,000 megawatts is frozen in what we call heating-plant losses, or in the production of electric power associated with thermal power. Further, there are some power losses because of planned repairs and maintenance on power-industry equipment and what we call chance losses (break-downs). The sizes of these figures vary from one period of the year to another. During the repairs campaign, losses on this account reached about 4,000 megawatts. On the other hand, chance losses stemming from various sorts of minor or major stoppages exceeded 2,000 megawatts. During the winter period (in December) planned repairs reduce system output by 500-600 megawatts on the average, even during the most adverse climatic conditions.

In this connection, in the so-called good days for the power industry, planned and chance losses total about 2,500 megawatts. Even assuming a great decline in these losses, the power balance-sheet is going to come out in the red this year, and we will not be able to fully meet the demand of our customers. And after all the above-mentioned 24,000 megawatts also includes 2,850,000 from industrial power production, where there is a still greater, often unjustified difference between installed power and available power.

You must also remember that the power industry itself has ever growing power losses stemming, for example, from the decline in the quality of hard coal in relation to the design figures of the electric power plants.

[Question] Given the constant emphasis on the importance of the power industry, why are there such great slips in many power industry investments? What is being done to change the existing situation?

[Cice Minister Jerzy Wojtowicki] In talking about causes, we must say that in 1973-1975 there were great restrictions on power industry investments, and this fact caused an increase in installed power which was less than the needs of the national economy called for. During the current five-year period, the effects of construction completed in the power industry are providing about 7,100 megawatts. During the next five-year period we expect to have a power increase of at least 11,000 megawatts.

Several elements helped bring about the grave "slippages" in carrying out power-industry investments: inadequate contracting potential on the building sites and the incapacity of industry supplying the power industry with necessary equipment and apparatus. These difficulties made the slips very substantial often. They occurred back in the initial phase of the realization of the sites, and in later stages it was not possible to make up for them completely.

We should like to avoid allowing such situations to occur in the future. We are tying these aspirations into concrete organizational changes in the ministry. For example, this September the Energobudowa Power-Industry Construction Association was made subordinate to the Ministry of Power Industry and Atomic Energy. This industrial association is the largest which has existed up to now in the construction ministry. For 30 years it has been engaged in power-industry construction and will continue to do so. We hope that the change in affiliation will also help make its operations more efficient and responsive to the needs of the power industry.

In 1973-1975 the decline in power-industry investments was responsible to a great extent for this organization's involvement in carrying out other industrial investments and those which were not even of an industrial nature. It got to the point where the major contractor of power-industry installations was using only 40 percent of its potential for such projects. At the present time the figure is up to about 60 percent. In the immediate future we should like to focus this enterprise's entire activity on power-industry construction.

Of course, the rise in targets planned for the coming five-year period (from 7,000 to 11,000 megawatts) requires the further development of this organization and additional tooling up, because its operating efficiency depends on this without a doubt.

As the result too of placing the Megat Industrial Association, the key producer of all the essential basic equipment for the power industry, under the ministry, there should be a better, more efficient supply of this equipment for the power industry. We hope that the uniform guiding of these two organizations, their planned further development, and systematic co-operation will help bring about improvement and therefore acceleration of the investment cycle.

[Question] When will the Polish power industry system obtain a network which will guarantee a reliable supply of electric power to industrial and domestic customers?

[Vice Minister Jerzy Wojtowicki] The power industry network is presently underinvested too, and this has an impact on both the effectiveness and certainty of power for customers. We realize the need to expand network investments and to work for full satisfaction of the country's needs in this area, but the possibility of increasing tasks in network construction is also tied in with the need to bolster the enterprises carrying out this

construction, that is, Elbud, which is the major contractor for the networks with the highest voltage (that is, 400 kilovolts and 220 kilovolts), and also the Network Contracting Plants (Zakłady Wykonawstwa Siecowego), which are regionally subordinated to the various individual power-industry plants. These enterprises must be assured of adequate contracting potential and apparatus, especially cables, the production of which is far below what is needed. The past potential of these enterprises has made it possible to increase tasks in network construction by about 5 percent. We are estimating that in order to meet only the most urgent needs in this area we should increase these enterprises' production capacity by at least 25 percent per year, which, obviously, means building up these organizations to that extent.

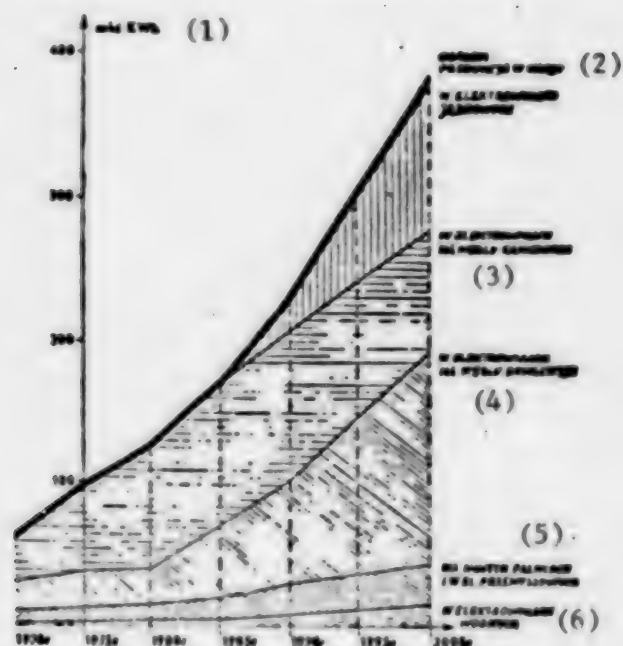
At the present time we are building about 1,000 kilometers of industrial high-tension systems per year. Up until 1975 we built about 1,200 kilometers per year, and after 1971, about 900 kilometers. In connection with the rise in the demand for power we began to build the Polish 400-kilovolt transmission system, and somewhat reduced, owing to the lack of resources, the expansion of the low-tension (that is 220-kilovolt) transmission system put up in the 1960's. Nonetheless, the lack of domestic equipment for the 400-kilovolt system, and the lack of adequate contracting potential were the reason why actually we are building only about 50 percent of the high-tension systems we need. The situation is similar for the problem of expanding the medium- and low-tension distribution systems which are perhaps the most needed at the lower echelons of management. Alongside modern distribution equipment, this expansion is also limited mainly by a shortage of cables, insulated conduits, and so on, and for the overhead lines for the small towns and villages, ordinary reinforced concrete poles and good line insulators which can bear up under the frequent changes in temperature in Poland without cracking.

[Question] It is often emphasized that the key problem of the Polish power industry is the shortage and poor quality of the coal supplied to it. What is this problem really like? What are the changes and directions for resolving it?

[Vice Minister Andrzej Wyrzykowski] As everyone knows, the Polish power industry depends to a major extent on hard coal and as an exporter of that coal at the same time, should burn the worst grade of it.

At the present time are there difficulties in the power industry or is there a decline in attainable power because of coal quality? Well, to a certain extent, yes, and this is mainly in those electric power plants which have been designed during the period of the hard coal crisis. Then the coal projected to be used in these power plants was coal of the highest quality, and therefore now there has been a decline in the attainable power of certain electric power plants.

Electric Power Production and Its Structure by Type of Fuel



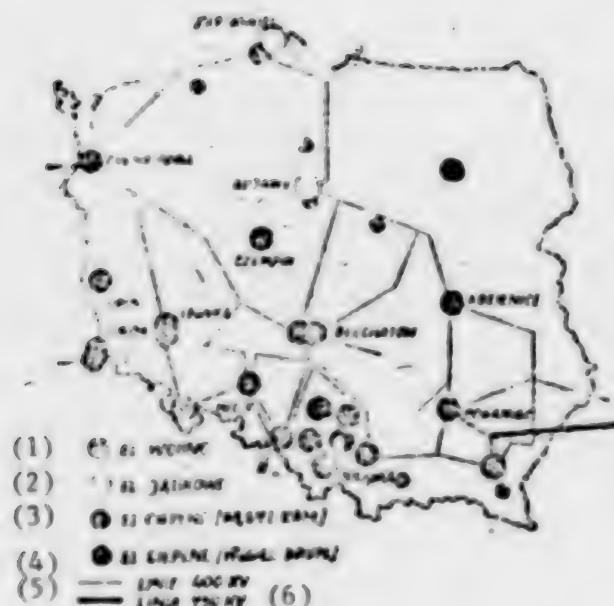
[Key]

- | | |
|--|---|
| 1. billion kWh | 4. electric power plants using brown coal |
| 2. total output in Poland | 5. electric power plants using other fuels and industrial electric power plants |
| 3. electric power plants using hard coal | 6. hydroelectric power plants |

The further development of the Polish power industry will be based to a major extent on brown coal. While the level of its extraction this year is reaching 40 million tons, by the end of the next five-year plan, that is, 1985, this size will be at least doubled. Intensive development of brown coal extraction will create a constant rise in electric power production based on brown coal. The power industry is very proud of this fuel, and the use of brown coal for other purposes as well is anticipated. Of course the power industry will have certain amounts of particularly lower-grade hard coal available (so-called waste), and new electric power plants will be located in suitable places, but the major development will be based on brown coal.

[Question] At one time in Poland there was an expanded system of small hydroelectric plants, which were successively phased out over a certain period. Specialists claim that for certain customers they are a sure, needed, and profitable source of power.

Development of Basic Power Industry System to the Year 1990



[Key]

- | | |
|---|-----------------|
| 1. Hydroelectric power plants | 5. 400-kV lines |
| 2. Nuclear electric power plants | 6. 750-kV lines |
| 3. Thermal electric power plants (hard coal) | |
| 4. Thermal electric power plants (brown coal) | |

[Wyrzykowski]: At present within the country there are a total of about 100 small hydroelectric power plants in operation, and their total power is about 120 megawatts. At the beginning of 1978 the government made decisions concerning the development of hydroelectric power plants. They pertain mainly to the installation of new power in connection with undertaking the program for regulating the Vistula. The ministry is also making preparations to create conditions for the installation of turbine units on small rivers and the development of electric power plants of up to 5 megawatts. Nevertheless, overall in Poland there are not great conditions for hydroelectric power production. The total power possible from making full use of river flow would not be more than 5,000 megawatts, and at the top reaches of the 5,000 figure we are already getting into the problems of the economic profitability of financing in this direction, although somewhere in the realm of this figure we should and can install electric power. Alongside the benefits to be derived from the reduction in fuel, this

would mainly mean increasing the reliability of power supplied to the various local customers. On the other hand, in order to be able to set up such small electric power plants, it is necessary to undertake production of appropriate equipment. In connection with the fact that the electric power equipment industry is now subordinate to the Ministry of Power Industry and Atomic Energy, such a program of production of small turbine units and generators will be undertaken.

[Question]: When, really, will nuclear power feed the Polish power system?

[Deputy Director Wladyslaw Sikora]: To my understanding the question: What is happening with nuclear power? hides the question: Why is it that we still do not have it, inasmuch as we have been talking about it for so long? I think this is a good illustration of the typical situation in the power industry in that there is a period of several years which unfortunately elapses between the time the decision to build the power industry installation to obtain the results and the time the results are actually achieved. In nuclear power this general rule has added to it one another new element, the fact that both the decisions on this matter and their implementation depend not only on successive internal provisions but also certain international agreements, which usually draw out the process still further.

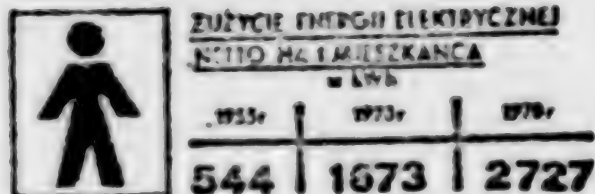
[Question]: What is the situation with the implementation of this program?

[Answer]: Well, at the present time preparations are in process for the first stage of construction of the Zarnowiec electric power plant. The technical and economic details of the construction have been worked out, and they are in the process of being examined and approved. At the same time, in cooperation with the Soviets, we are working on the technical design of the first stage, and we hope that in 1980 the technical draft of the first stage of construction of the Zarnowiec electric power plant will be ready. At the same time, talks and work related to the second stage of construction of the nuclear electric power plant in Zarnowiec will begin.

The effects should come somewhere in 1985-1986. Unfortunately, this is what implementation cycles are like. On the building site itself we are beginning preparations next year, and "scheduling" will begin in 1981.

[Wyrzykowski]: In connection with the nuclear power problem, it is worth adding that production based on this source will be relatively small for the time being, inasmuch as it will be only about 800 megawatts at the end of 1985 and the beginning of 1986. It will not be until 1990 that the figure will be about 5,000 megawatts. Nonetheless, owing to the further overall rise in installed power in the system, the proportion of electric power coming from nuclear plants will be relatively small, although it will systematically increase in terms of absolute figures.

Per Capita Net Electric Power Consumption in kilowatthours



[Question] What is the situation really like with regard to the protests being made by the society in many countries regarding nuclear energy?

[Sikora] These protests are typical of Western countries. There are not any in the countries of our block, the CEMA countries. Why? First, in Western countries the power industry is usually the property of joint stock companies which do not want to lose their profits as the result of the expansion of nuclear power industry by the government. On the other hand, for various reasons, especially psychological considerations and atomic pollution, the societies are afraid of threats to safety and health. The fact that in the socialist countries the nuclear installations are built by the state, that is, by organizations responsible to a broad extent both for the construction of the electric power plants and for supervision of their operation, has a calming effect on the society of our system and provides the assurance that the entire enterprise has been thought through in every detail right down to the most minor consideration and is absolutely safe.

I must say that basically in the world there has not been up until now a single instance -- and I am including the most recent one in Harrisburg -- which actually caused the sort of radiation that the society is afraid of, because even if radioactivity was released from the nuclear power plants, from the viewpoint of contamination of the people, the leaks have been extremely small, even when failures and emergencies have occurred.

We can say that from the safety viewpoint the technic 1 designs of the nuclear reactors have proved themselves in practice, and I think that they have insured the protection we are talking about. On the other hand, however, the Harrisburg incident can be treated as a special sort of warning that in this construction we can never tell ourselves that the designs used, even those which have been thought out in the greatest detail, are already perfect and 100-percent certain.

Possibilities and Limitations for Saving Power

[Question] A great deal is being said about the necessity of rationalizing energy and fuel management. Its effects do not seem to be in proportion to

the needs. On the other hand, certain savings measures (for example, dark street crossings, roads into towns) do not seem so important for improving the balance-sheet, given the great waste of power in industry. What kind of savings are we really talking about, and what are the real possibilities of achieving them?

[Chief Inspector of Power-Industry Economy Jerzy Wojcicki] To reduce the power shortages, alongside the expansion of the power industry, the basic issue is the reduction in the power-intensiveness of the national economy, and this depends on many elements, but two above all: on the structure of production and on the efficiency of power-industry equipment and machinery. The structure of production of course stems from the whole strategy of development of the national economy, and it can only be changed over a period of many years. On the other hand, improvement in the efficiency of power-industry equipment is a real, urgent matter, because most of the basic energy-intensive equipment unfortunately is still very inefficient. What is worse, the newly produced equipment is also too energy-intensive. Of course, these enormous fixed assets in the form of energy-intensive equipment cannot be replaced for some time. On the other hand, we can use sodium-vapor lamps as an ordinary source of light, for example, far more quickly, and in this way we can greatly reduce the consumption of power per unit of light.

The program for the modernization of industry in terms of improving power management is basically being carried out. Nonetheless, we do not think that this rate of modernization and adaptation to reduced power consumption is as rapid as we would like. Of course, this can be justified by a number of objective factors: difficulties in carrying out certain investments (both those which are really difficult and those which the contracting enterprises are not too anxious to undertake), difficulties in obtaining certain power-industry equipment, machinery, automatic equipment, and so on, but we must not absolve ourselves with these difficulties, because very often we still find ordinary waste of power and social lack of discipline in abiding by the regulations in effect in this area.

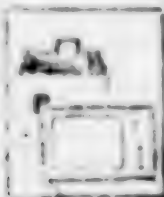
[Question] Transmission losses account for a dozen and some percent of the power produced. Are there any possibilities for reducing these losses, and what is being done in this direction?

[Wojtowicki] In 1965-1977 losses related to the transmission of power amounted to 10 percent of production. The lowest percentage was in 1970, when this figure was 8.9 percent. These losses are the result simply of the whole system's underinvestment. The ministry has also prepared a draft of a Council of Ministers resolution to resolve this problem. It provides for comprehensive tasks for 1980-1985 in the area of expansion of both the system and distribution network. The total investment figure is about 100 billion zlotys. This is a very large sum, and it seems as though the execution of these tasks will make it possible to reduce substantially the losses we have borne up until now, pushing them at least to the 1970 level.

[Question] To what extent could the very cost of electric power itself serve as an incentive for thrift? Is the price level for electric power in our country correct?

[First Assistant to the Minister, Lechoslaw Gruszczyński] Neither high nor correct. For the small consumer the price of electric power in Poland is 90 groszy in the daytime and 30 groszy at night. Given the relatively low level of electric power consumption in Poland, its cost is no real problem for the small user. So why has the schedule of fees for power remained the same at such a low level for so long? Simply because consumption in the country is relatively low. The legislator here has two souls, so to speak: On the one hand he would like to set the prices in real economic ratios, but, on the other, he does not want to place before the society economic barriers to expanding electric power consumption, which is after all one of the important standards of the country's development, the development of civilization and progress. For this reason for more than 16 years the prices of power have remained at the same level, while prices have increased in other areas of the economy, which, of course, does not benefit the economic ratios in power industry.

Consumption of Electric Power per Household in the Country in Kilowatthours

	1959	1970	1978
	375	740	1258

In industry too electric power prices and fuel prices are too low, compared to the cost of producing them, and it may be that we should consider the greater coordination of supply prices for the management of power in industry.

Nevertheless, this requires very careful research and analysis, and the adjustment of the economic system of prices on electric power, so that the prices will have a positive effect to encourage both development and thrift, an incentive throughout the national economy and not just be an economic and psychological barrier (which could happen if the calculations were not correct).

[Question] The overwhelming majority of minor plants and rural areas have no power engineers or even a specialist trained in power engineering. Who is taking care of the issues of proper power management, and how?

[Majcicki] Key industry has specialized power-engineering services, but in small industrial and service establishments, in the municipal-residential economy, and in the housing economy, it is true that no such services

exist. This is the reason why these units' concern and action on behalf of proper thrifty energy management is observed more in word than in technical and economic action.

These enterprises' industrial associations and directors have been charged with the task of creating such services, which do not need very high qualifications in these plants. We agree even for them to be linked to other services, for example, the chief mechanic or the repair service, but for the time being the result of this solution is negligible.

At any rate there are appropriate legal regulations on this matter, and they are of rather high rank (directives issued on the basis of the fuel and power economy law published in the DZIENNIK USTAW), charging all establishments with the obligation of employing appropriately qualified persons to handle matters connected with the operation of equipment, supervision of their operation, and so on. This also applies to small plants with an installed power of even less than 200 kilowatts in power-operated equipment.

[Question] Why is it presently so difficult to obtain permission for a night fee?

[Gruszczyński] Before I explain the source of the difficulty, let me say something about where the night rate came from. It came from the excessive decline in demand for power during certain hours of the day, a decline which was difficult for the operation of the power system. In the Polish structure of the system, the electric power plants do not like to adapt their production to such great fluctuations in demand. For this reason it was necessary to establish certain buffer systems to provide an incentive in those hours when there is an excess of power for somebody to use that power. Because as everyone knows such power can be used especially for purposes of stored heat, in this direction in 1966 an appropriate economic and technical incentive was created in 1966, in the form of a lower fee schedule, schedule II (what is called the night rate), which was to cover only the variable electric power costs, that is, the costs of fuel. As we said, today that situation has changed. Unfortunately there are no longer drops in demand or differences in the burden on the electric power plant, or even at night a production "allowance" or "breathing spell" necessary to carry out maintenance to make it possible to do the best work during the day. For this reason we had to reduce very greatly the issuance of permission for the so-called night rate and give this permission to use it only in those instances which were absolutely socially justified. We cannot give a larger group presents out of what we do not have.

[Question] How do other countries propagate and save electric power?

[Gruszczyński] Power savings problems in general, including those related to electric power, are the subject of interest and action in all the countries in the world. This is not just a Polish problem. Every country

has various ways of effecting savings, depending upon its own particular situation.

For example, 2 years ago I was in Canada, where I saw, for example, streets and buildings for public use all lit up in broad daylight, and the population was encouraged not to disconnect light bulbs even when there was full sun, because they can be ruined. Everything I am telling is true, but it is the truth of the Province of Ontario, which gets 5,000 megawatts of its 22,000 megawatts of installed power from hydroelectric plants, which can be operated continually more cheaply than through regulated load.

In atomic power the regulation of the load of the atomic reactor and the entire power system is difficult too, because the atomic reactor "does not like" to undergo such regulation. The effects of such regulation are also negligible.

Generally speaking, the whole world is saving power and power raw materials, as I mentioned, and we can see this after all everyday in the newspapers. This savings is going on in the United States and in France, all over Western Europe, and also within our socialist block.

Under our conditions, given the structure of our balance sheet of power and energy, we should save energy and fuel mainly through the continual improvement of the technology of production and in this way the reduction of the energy-intensiveness of the national economy.

The Office of the Chief Inspector of Energy Management is fully oriented as to what should be done concretely in Polish industry to improve energy management, and these solutions are certainly more effective than building new power industry installations. These actions and a certain modification of the country's energy policy are after all already in progress, except that for the moment the scope is narrower than necessary and possible.

In order to save electric power we would not like to encourage children to do their homework by candlelight or bathe in a dark bathroom, because what we need is reasonable saving and thrift at each step, not just in the realm of electric power.

The chief inspector of power management also has a number of means by which he can have an influence to curtail waste. Recently the power industry has been frankly telling its customers that careless waste of power will simply mean running the risk of being cut off from the system. And this practice will be adopted (for the good of other customers who need power but are now sometimes deprived of power through no fault of their own), regardless of their explanations about not knowing the regulations or the current energy situation in the country.

Preparations for This Winter

[Question] Against the background of the condition of the power industry as has been already described along with its needs and problems, tell us what the repairs campaign went this year. It was probably more difficult after the effects of the winter.

[Deputy Director Teodor Czechenikow] This year repairs to power industry equipment encompassed more than 80 percent of the total power installed in electric power plants. This is a very great scope of work which after all has been going on now for several years and having an important impact on the scale of restrictions in the supply of electric power. In September the progress of the repair program amounted to 83 percent of the annual plan, which means that by fall we had been unable to complete the repairs on power-industry units with a total power of 1,800 megawatts. The consequences of this state of affairs are obvious.

As a footnote we should add that repair possibilities are limited from year to year by what is called the narrowing of the repair field, which means the maximum electric power plant load throughout the day (and throughout the entire year) which must be tapped to satisfy all power needs, without providing the repair people with the planned work front.

Of course there are other factors which make this state of affairs worse. One of them is the clearly widening imbalance noted in the past few years between the expansion of investment potential and the possibilities of the repair facilities, although the effects of this situation call unequivocally for at least equal treatment for these two sectors of power industry.

What sort of undertakings are we working on to change this state of affairs and what can we count on in the repairs area in order to improve the existing situation?

First of all, we have drawn up a program for the development of the production-repairs facilities of the power industry, and this program has gained the rank of a ministry and government program. Of course, this is no solution to the problem, but only a way of alleviating it, because generally it is only the elimination of the power shortage which can change the existing situation, and this also makes it possible to conduct a rational, effective repairs policy.

As repair people we have great hopes for the ministry's taking over the contracting for power-industry construction (which is related to repair operations, particularly for wide-scope modernization repairs) and for the ministry's taking on the major producers of power-industry machinery. At present only 85 percent of the repairs needs are being met and 80 percent of the needs for spare parts deliveries are being met. The ministry's support is meager, although in a forced situation it is meeting even 65

percent of all needs for spare parts. The subordination of the two industrial associations mentioned above to the ministry will make it possible to count on real help both in performing repairs and in eliminating the spare parts shortage, which has been particularly severe up until now.

We also anticipate that by introducing on a broader scale the so-called industrialized method of repairs (that is, building on the machinery the whole component prepared ahead of time), we shall greatly reduce the repair cycle and improve the quality of the work.

[Question] How do you assess the current situation regarding preparations for the season? Where are the most serious threats to the effectiveness of the system?

[Gruszczyński] All our work is divided into two directions. The first closest and most important is the focusing of all capacity on the maximum reduction of power losses in the system, so that particularly during the oncoming peak load period these losses will be as small as possible. The country's leadership has given us financial assistance for economic incentives to encourage good results of work in power industry, that is, bonuses for concrete effects in increasing and maintaining power. A special bonus fund has been set up for the attainment of 600 megawatts more than the past plan. If an electric power plant during the morning and evening peak period averages through the month greater power than was previously projected, then it has a chance of getting additional funds for special bonuses for the people who deserve it most in this regard, beginning the first quarter next year.

As has already been mentioned, the country's leadership has also decided to place enterprises of electric power plant construction and the industry of basic power industry machinery and equipment under the power industry ministry.

In the discussions it has also been mentioned that the repairs campaign has been greatly delayed, that it is still in progress. We also are aware that the equipment repaired (power blocks, current-generating systems) have not been fully repaired, because of the shortage of spare parts, time, in a word, conditions for the proper performance of repair work.

We are still trying to mobilize spare parts (and supplies) producers for this equipment, to encourage them to increase their deliveries in the fall.

At the same time we are getting actions ready to help us to see that the breakdowns are not repeated, because we are generally familiar with the causes. In the future the power-industry machine construction industry in cooperation with the expanded repair facilities are going to have to insure the elimination of the weak links in power industry equipment, those which most often create the greatest breakdowns. From this solution

we want to make a general principle, but it will not be until 1980 that it can be used on a broad scale in the repairs campaign. This new solution should insure better preparation for it and its better operation.

[Question] In the coming fall-winter season should we continue to count on the annoyances of unexpected electric power outages?

[Gruszczyński] Local officials, the country, must be prepared for such interruptions in power, and these can be considerable. Why? Because if they really come in the period of difficult weather conditions, which cannot be excluded 100 percent, then for the unprepared customer this can mean damage to equipment, fixed assets, livestock, and so on, in addition to posing a threat to human life. Hence, throughout the entire national economy and the society we must prepare as well as possible for the most difficult conditions, so that extensive shutdowns will bring about the smallest possible irrevocable losses. This is a directive for customers. On the other hand, the ministry's actions and tasks are aimed at not permitting extensive shutdowns, but if they prove unavoidable, then possible losses must be minimized as much as possible by frequent rotation of outage blocks and by warning customers far enough ahead of time about the planned shutdowns.

[Wyrzykowski] Here we have to make a clear distinction between restrictions and shutdowns, because they are two completely different issues and two different problems. Restrictions are imposed in industry during the periods of heaviest demand for power, that is, usually during the morning and evening peak load periods, with a reduction in these restrictions during the period of the daytime valley, that is, around 2 in the afternoon. On the other hand, larger or smaller areas are shut down as appropriate.

When the restrictions possibilities, sometimes even very great ones, are exhausted, then we have to go on to the second source, shutting down certain (larger or smaller) sections of the country. When we use shutdowns, principles of rotating as much as possible the plants which have been cut off are in effect, in order to make the period without power as short as possible and avoid serious economic and social effects. The State Power Distribution Control Agency is trying to follow these principles consistently.

[Question] Will any areas of the economy or sections be excluded from the shutdowns?

[Gruszczyński] Districts, no. Areas [of the economy], yes. We are trying -- and this coincides with the decision of the country's leadership -- to protect branches of the economy which are particularly important and sensitive from shutdowns. On the other hand, local officials are familiar with the programs of action drafted in cooperation with the local power plants to be used in the event of restrictions. They are familiar with

the order and extent of them. Where it is possible, shutdowns can and should be determined by a selection process in areas of the country where shutdowns are anticipated.

We have given the people in the field appropriate directives on this matter, pointing out the need for a detailed analysis of the situation of the network and efforts wherever possible to making corrections and switches to prevent the mechanical depriving of a supply of energy (by shutting down a whole 150-kilovolt line which provides power for 50 villages and five towns, for example) to hospitals which are also located in this same district, along with certain factories of small-scale industry, whose production is particularly sensitive, even if they have efficient power supply units.

We know that such action has been undertaken. Of course such action does not provide for complete selectivity of supply. If there are district shutdowns, that is, catastrophic ones, then we cannot protect everything. In such cases we shall try to use the greatest possible rotation among the areas which are disconnected.

Cooperation With Local Officials

[Question] What sort of concrete tasks related to power problems are the responsibility of the voivodship chairmen, the presidents of rural communes, and the heads? On what planes and in what ways does the ministry cooperate with local officials?

[Director Wanda Jaworska-Gromczynska] These tasks are given rather detailed treatment in the rules and regulations governing the voivodship chairman and the head of the rural commune. For example, the voivodship head has supervision over the supply and distribution of fuels and power, works in conjunction with the bodies of state supervision and control over fuel and energy management, initiates actions on behalf of the rational management of fuels and power in the voivodship, provides for the inculcation of rational, thrifty methods of using fuel and power in units subordinate to the people's council, coordinates the implementation of programs and plans for the development of the heating-plant system, and so on.

Practically speaking, no matter concerning power engineering is handled in the field without consultation and close cooperation with the responsible party, from determining the location of an electric power plant to the establishment of a program and mechanism for thrifty use of power and the supervision and monitoring of the program's implementation.

[Wyrzykowski] The power engineering ministry and the chief inspectorate of energy management and its bodies work in cooperation with the people's councils and local bodies of the administration through voivodship plenipotentiaries created in each voivodship in 1976 for saving electric power

and fuel. They have the rank of deputy voivodship chairmen, and they in turn have caused the larger production and service enterprises in the field (and rural communes in some voivodships) to create socioeconomic commissions on fuel and energy savings charged with the initiation and ongoing monitoring of the implementation, within the plant, of specific thrift undertakings.

It is just with these groups that we transmit our goals, tasks, and undertakings to lower levels. Their participation is also great and measurable in carrying out these tasks and achieving the goals set. For example, recently in close contact and cooperation with us they conducted exact models of lighting for streets, squares, gas stations, shops, and various other installations which very often are overilluminated, while there is a severe shortage of power. The condemnation or restriction presented for this lighting in many of the installations mentioned would also bring about some savings of power and hence a decline in the scope of imposition of restrictions on the use of electric energy and power.

[Question] What sort of help would the power-industry repair services expect from local officials?

[Czecenikow] First of all, realistic priorities in employment, especially for the production and repair facilities. This is no longer even a question of the number of slots which we have and which we are unable to fill, but real help in directing the new labor force to repair work. This is so justified that the situation even so forces this direction of action, because the referral of people to work in other areas of the economy through failure to appreciate that power industry has a priority later means shutdowns and stoppages in those plants to which surplus labor has been referred, or the delegation of the surplus to go to the aid of power industry.

Another matter which is important to us is the location of bases for the electric power plant repair facilities. The necessary agreement on the location very often is drawn out and unnecessarily prolongs the investment cycle for the construction of the bases for these services, and for power industry this is an issue of fundamental importance.

Another problem related to the action of local officials which also has an impact on the repair activities of the power industry services is the location of waste dumps (for slag and ash) for waste coming mainly from the electric power plants. Every person in charge would like to have an adequate supply of electric power, but when it comes down to the fact that the ash has to be put somewhere, nobody is anxious to see it on his own grounds. From the viewpoint of environmental protection, this is understandable, but these issues must nonetheless be resolved, and in this area the power industry is waiting for concrete assistance from local officials. Putting these sites at a distance creates transport difficulties and has an adverse effect on efficient electric power plant operation and the balance-sheet of power.

Also related to this problem is the question of expanding the use of power plant waste materials in local building materials plants. There are a large number of technologies which have been developed using this waste for building purposes. The simplest example is as admixtures of certain components, to say nothing of prefabricates, road construction, and so on. The more effective exploitation of this possibility also depends on central authorities' greater interest in this problem.

[Deputy Chairman of the Main Administration of the Power Engineers' Trade Union, Marcin Tyminski] One of the important planes of cooperation is the above-mentioned indispensable help of local officials in obtaining employees for power industry construction and repairs, as well as the creation of a proper social climate, so much needed for this subbranch.

It is correct for us to speak a great deal about the material and social losses resulting from inadequate satisfaction of needs for energy and, more precisely, the uncorrelated growth rate of power industry development. It was correct to talk about the need to ease this situation as much as possible through maximum effort on the part of the leadership of the power industry ministry and workers in all its basic groups: the electric power plants, the systems, and the repair plants. It is nonetheless too bad that we usually say nothing at all about the feelings of those very power engineers connected to the bad situation they are experiencing, and there is after all no doubt that most of these people are good, dedicated employees full of devotion to their plants. The past winter supplied a number of examples of this fact.

After all, all the electric power plants are presently in operation, and let us add that they are working hard, and not, as the press often suggests, in white aprons, among fish bowls and potted palms, with great support from electronic machinery. An electric power plant has only two such privileged people, five at most. The repair teams work hard too, but usually you do not see those people, when by all standards they would merit some sort of distinction. For example, during the Lower Silesia flood, when it was the power engineers who removed the effects in a very short time. Neither the society nor the town officials had any good word for them.

[Question] What sort of key problems does the leadership of the ministry think should be resolved in power industry in 1980, and what in this respect does it expect of local officials?

[Gruszczyński] From the beginning of this year to the present moment the government leadership has made a number of decisions concerning both immediate assistance for power industry and its more distant future. They should bear fruit (and they are already bearing fruit) in preparations for the oncoming fall-winter peak period and the acceleration of the further development of power industry. These decisions have concerned a number

of issues: financial, systems, and organizational, which generally speaking will lead to privileges for power industry, for example, in deliveries of materials and spare parts, the hiring of personnel, and so on. For us an extremely essential and important decision is giving power industry its own investment contracting and industrial support, which perhaps has no clear impact yet on the current situation in the power industry but will undoubtedly have a colossal impact on its not-too-distant future.

Hence, in 1980, against the backdrop of the decisions made, we should like to do the following:

First, make the best possible use of the financial and organizational assistance which the government has given up and by virtue of which we can already talk about a certain system of resolving power industry problems and the structuring of its further development,

Second, we should like to speed up investment tasks appropriately both in 1980 and during the next five-year period.

In both the first and the second case we will appeal more than once for help from local officials, help upon which we are counting now and will be counting in the future.

10790

CSO: 2600

PERFORMANCE DATA FOR NEW HELICOPTER PUBLISHED

Warsaw SKRZYDLATA POLSKA in Polish No 50, 16 Dec 79 p 3

[Article by Tadeusz Chwalczyk: "Polish Aviation Works (PZL) Sokol (Falcon)"]

[Excerpt] The day of 16 November 1979 is likely to be noted in this history of Polish aviation industry. On that day, at high noon, the new Polish helicopter PZL Sokol rose in the air for the first time from the airfield at the PZL Transportation Equipment Plant in Swidnica.



The craft, guided by the test pilot Wieslaw Mercik, Dipl. Eng. and with Tomasz Zakrzewski, Dipl. Eng. manning the test instruments, performed the trial take off and the limited maneuvers above ground as programed and then landed without difficulty. This started the first stage of flight tests, the last phase of a new helicopter development.

The origin of Sokol goes back to 1974 when the technical requirements for the craft were defined. At that time a group of designers, under the leadership of Stanislaw Kaminski, M.Sc(Eng) departed for Moscow where the basic design was discussed with Soviet designers who have rich experience in this field. It must be emphasized however, that the PZL Sokol was developed as an independent design by Polish engineers who benefited from friendly help of their Soviet colleagues. This was, as they say themselves, their "thesis" work in the development of a new generation of helicopters.

Relatively soon, already in the fall of 1975, the initial design phase was completed and in May the following year, the "prototype commission" met, generally accepted the basic design and submitted certain complementary recommendations. At the same time, the design documentation was begun and the work started on defining the production technology, the design of tooling and testing guidelines. In this phase of the new helicopter development, a sizeable staff was already involved both from the Development Research Center and from the PZL Transportation Equipment Plant in Swidnik. Teams of specialists joined the staff at that time: in Rzeszow, from the Aviation and Engine Industry Association (ZPL) where the engines and transmissions were designed; in Wroclaw, where they specialize in the production of hydraulic and fuel systems; in Cracow, where the ventilators and cooling systems are designed and made; in Warsaw, in the well known WSK II, where the instruments and avionics are made; and, finally, in Gorzyce, in the specialized light casting foundry. The theoretical work and some design calculations were simultaneously conducted in the Aviation Institute where, also, the undercarriage was designed and produced. Among the co-producers many other enterprises and institutes were found which are not directly connected with the aircraft industry: Roller Bearing Factory in Krasnik where some essential elements of the helicopter were designed and produced, namely the main bearing of the wobble plate; the Rubber Industry Plant in Wolbrom, the supplier of the main fuel tanks; and the Glass Foundry in Sandomierz where, under the guidance of the scientists from the Glass Institute of the Academy of Mining and Foundry Engineering in Cracow, the front windshields were made of tempered glass.

All these efforts had to be coordinated by the chief designer of the PZL Sokol, Stanislaw Kaminski. The team of technology experts was led by Henryk Pac, Dipl. Eng. whose duties also included the overseeing of preparation of suitable tooling for the production of the prototype.

A few words about the helicopter itself and its flight characteristics. The power is provided by two turbine engines. PZL-10W, designed and produced by the Development Research Center in Rzeszow. The design of these engines is based on the Soviet engine GTD-10, the same which is used in the An-28 aircraft. The adaptation of the power plant to the helicopter use was done by Hubert Nowak, Dipl. Eng. in Rzeszow. Each engine has the take off rating of 640 HP (while the maximum augmented power reaches 736 HP). The PZL Sokol overall length, including the rotor blades and tail rotor, is 18.8 m, the height is 4.1 m, the diameter of the rotor (4 blades) is 15.7 m and of the

tail rotor (3 blades) is 3.0 m. Both the main and the tail rotor blades are made of glass laminates. The helicopter can accommodate 12 passengers and 2 crewmen (pilot and flight engineer). It has a large cargo compartment (3.7 x 1.6 x 1.4 m) and two sliding doors on both sides of the cabin.

Of great operational value is the capability of level flight and even of ascend (at the rate of 0.25/m/scc) with one engine shut off. The design characteristics specify the hover ceiling out of ground effect up to 2 - 2.5 thousand meters, the maximum ceiling of 6,000 meters, the level flight speed of 260 km/hr (cruising speed of 220 km/hr) and the range of 550-600 km (with an additional tank for up to 1,100 km). The payload is 1,200 kg or the external lift capability 1,500 kg. The total take off weight is 6 tons.

As these data show, the PZL Sokol is as good a helicopter as any comparable craft made in other countries. Let us pray that the program of necessary tests and trials be finished as soon as possible and the Sokol find its way into production.

8801

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PLANS FOR USE OF SOLAR ENERGY IN HOTEL COMPLEX

Bucharest FLACARA in Romanian 24 Jan 80 p 10

[Article by Lionel Nitescu: "In Romania--The Largest Solar-Energy Hotel Complex in the World"]

[Excerpts] The sun will be put to work at the Romanian seashore, to an extent hitherto unknown in our country and, possibly, even in the world, in the Neptun resort area. However, the implications, as we will see, are much greater: What can we expect from solar energy? First of all--at the seashore. Soon, the Midia, Tomis, Istria, Calatis, Bilea, Miorita, Terra, Apollo, and Romania hotels, with more than 4,000 beds, will operate in the summer on the basis of solar energy (for heating water), and in the winter, after these hotels are closed, the unused energy will be supplied to the Doina and Neptun hotels which are also open during the cold weather. The solar installation of Group I, that is, for the first four hotels, will go into operation in 1981 and the installation for the rest, in 1982. The project is the result of collaboration between INCERC [Research Institute for Constructions and the Construction Economy] (the installation laboratory, solar energy collective) and the "Carpati" Design Institute, with Engineer T. Pantea as project chief. With its 6,000 square meters of solar collectors, the Neptun installation will probably be the largest in the world, at least according to data published in technical reviews available to our specialists. Thus, solar energy will make a spectacular entrance on the seashore.

In this context, there are many questions and we are sure that our readers will formulate many of their own on the basis of the title of this article. We will try to answer these questions.

[Question] Comrade Engineer Dan Constantinescu, you are the head of the solar energy collective in the INCERC installation laboratory. The fact that your patents for the utilization of solar energy received second prize at the National Salon for Inventions in 1979 represents a new recognition of the current importance of solar energy for our country. What will Neptun be like?

[Answer] Of course, the hotels already existed. The innovation consists in the utilization of solar energy on the basis of original conceptions. The project appears to be a result and a development of the experimental system in the neighboring Saturn resort area, compared to which, the new installation will be a real giant. The collectors will be installed on terraces, not on the ground as in Saturn, and the concrete hot water depositories will be buried in the ground, to improve appearances and to resolve a number of technical problems. While the Saturn installation was thought out and produced on an empirical basis, an original method of computation was used for Neptun, with mathematical modelling and simulation through the use of an electronic computer, considering the climate in Romania, especially in the Black Sea area.

[Question] Speaking about the climate in Romania, you touch on one of the key problems of the utilization of solar energy in Romania. What about the winter? We are not referring to the seashore but to the rest of the country. At the present time, the temperature is minus 15 degrees Centigrade. What can solar energy do in such a situation?

[Answer] Solar energy offers multiple possibilities in the winter, especially in southern Romania where statistics show that there are an average of 750 hours of sunshine in the cold weather and 2,000-2,500 hours of sunshine during the entire year. The sun can be generous if we know how to profit from it.

[Question] Do the patents which received awards at the National Salon for Inventions relate to this?

[Answer] They aim at the production of thermal energy--hot water and heat--during the entire year in our homes. Of course, in the winter, solar energy is added to conventional energy sources, but with a contribution which is not at all negligible.

[Question] Dan Constantinescu gives us an engineer's view of how solar energy can be used for household purposes.

[Answer] It is based on the finding that on cold days, the sun heats specially constructed collectors, installed on the roof, to a temperature of about 50 degrees Centigrade. The invention calls for the recirculation through the collector of the water from the radiators of respective house. In order for the system to operate in good conditions it is necessary that there be a special caloric protection for the house, which is described in the invention certificates.

Instead of lining the walls with costly thermoinsulating materials, air heated by solar collectors to a temperature of 12 or even 15 degrees C., is circulated through the walls of the construction. Conventional sources will raise the temperature to 18 to 20 degrees. Thus, the contribution of solar energy increases spectacularly since crude oil,

methane gas, etc. will no longer have to raise the air temperature from zero to 18-20 degrees, but from 12-15 degrees to 18-20 degrees, thus resulting in substantial savings. Of course, this occurs only on sunny days. Solar panels will also be used in the summer to obtain hot water. Also, the system of hollows in the walls will be used for cooling.

This system has been applied in the design of the Delta Hotel (architect Sandu Miculescu) which will be constructed somewhere in the Danube Delta, incorporating this new Romanian idea for the utilization of solar energy, applicable to countries with temperate climates. Unfortunately, the design for the solar hotel, contracted with the National Council for Science and Technology as a research theme and completed last year as a project for execution, has not yet found a beneficiary, Engineer Dan Constantinescu says, despite the fact that the entire hotel, as a functional whole and in regard to its construction details, represents an innovation on the world level. In addition, the Research Institute for Domestic Trade and Tourism did a "feasibility" study at the request of INCFRIC and concluded that the building of the hotel in the delta, in Jurilovca, would offer the most favorable conditions.

No one has the courage to contract for the construction. This, an enthusiastic teamwork, well understood and greatly appreciated by the National Council for Science and Technology and the Central Institute for Research, Design and Guidance in Constructions, runs the risk of meeting an impasse. Why? Because the potential beneficiaries (tourism, the cooperatives) prefer standard designs. But without courage we will not promote the new. In this case, in addition, it is a matter of something new in conception, publicity of a special type for our domestic and international tourism since it is one of the few designs, perhaps the only one in the world at the present time, for a solar hotel! Another aspect, of special importance for the future: the construction of the hotel would serve as a training ground for future specialists in solar energy, for the executors, from engineers, to master builders, to simple workers. Sooner or later, there is no doubt that the utilization of solar energy must enter into our engineering practice.

[Question] How many beds will the Delta Hotel have?

[Answer] Some 120 in the summer and 80 in the winter. So it is an all-year hotel. In the summer, the sun will supply all the energy for heating the water, and other consumers in the area will also benefit from this energy. In the winter about 60 percent of the energy will be provided by the sun.

This is the plan. Those who have devised it think that in the near future it will be the nucleus of a veritable solar platform, of a sun city in Jurilovca. We are convinced that it will find a benefactor who will ask the enthusiastic promoters of the utilization of solar energy in Romania: "Do you have another solar hotel?"

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